

# THE IRON AGE

New York, Thursday, April 19, 1906.

## The Roteng Steam Motor.

A new and interesting line of steam motors and air compressors is being offered by the Roteng Engineering Corporation, Barclay Building, New York City, illustrations of which appear herewith. The particular feature

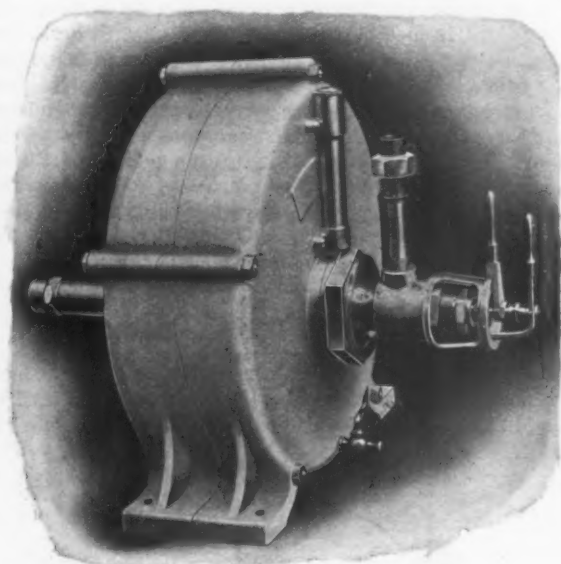


Fig. 1.—The Roteng Steam Motor.

of the line is high speed, combined with economy and perfect balance. The high speed implies directly small size and small weight for a given capacity and permits direct connection to electric generators, centrifugal pumps, fans or blowers, and such apparatus, as elevators, which is preferably driven through worm gears. The perfect

The machine consists essentially of multiple cylinders radially disposed around a hollow shaft. It is not to be considered a rotary engine, but is a combination of single acting reciprocating engines all connected to the same shaft, in which the cylinders are not stationary, but revolve with the shaft. The pistons or plungers are suspended by yokes revolving on circular bearings, eccentric to the shaft bearings. When steam is admitted under a piston the pressure produces a force acting on the center of the eccentric, which corresponds to the crank pin of an ordinary engine. The difference is that the pin is stationary and the reaction causes the displacement of the cylinder upon its piston, and the tangential component of the force produces the rotation of the cylinders about the shaft. There is no dead center to the machine as a whole, because at least two pistons are always off center and one of these is on its working stroke. A valve in the hollow shaft, which may be seen in Fig. 2, permits the intake and exhaust of steam as the mechanism revolves. In the motor a part within this valve is arranged to effect the cut-off. It will be seen that each part revolves around its own true center and the whole mechanism is in perfect balance. The air compressor is practically the same as the motor except that the cut-off valve is omitted and the operation is the reverse of that of the motor.

The motor in all sizes is claimed to have an economy of steam consumption superior to that of the corresponding size of any other reciprocating engine. The construction is such that no compression is necessary or desirable, making it possible to operate on steam regardless of the percentage of priming. The clearance in the smaller sizes is less than 2 per cent., which decreases with increased size. This improves the economy, which is further contributed to by the reduction of engine friction, brought about by the decrease in number of working parts, as compared with other engines, and the introduction of ball bearings for the principal bearing surfaces. An important result obtained from the general construction of

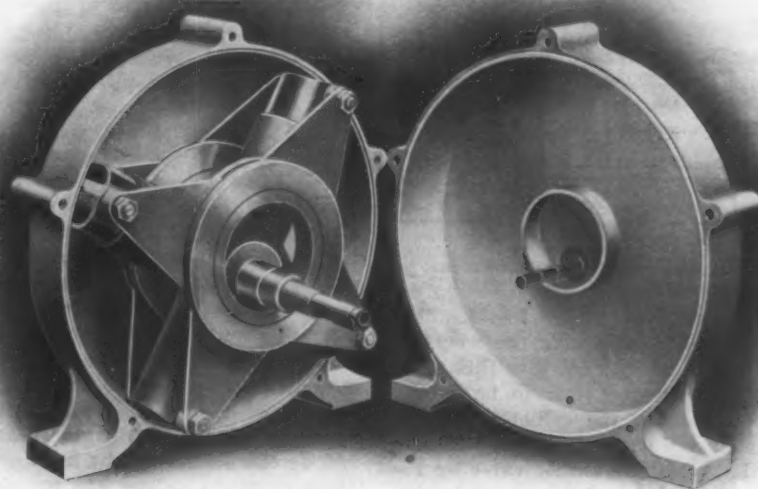


Fig. 2.—The Casing Opened, Showing the Mechanism.

balance makes the operation quiet as that of an electric motor, the general outlines of which the machine closely resembles, as shown in Fig. 1. A sliding or belt tightening base, similar to that commonly used with electric motors and generators, is supplied whenever a belt is employed.

the motor is the possibility of reversing instantly without danger of injuring the mechanism.

As a compressor the mechanically operated valve makes it possible to run at the same speed as when used as a motor. The mechanical operation of the valve, combined with small clearance, makes the compressor also

efficient. The entire lubrication of the compressor is provided for by a small amount of oil in the inclosing case. The mechanism weighs less than 20 per cent. of the present types of the same capacity now in use, giving it all the advantages due to great portability. The company is receiving orders for machines up to 25 horsepower capacity.

### The Ryan Tilting Steam Trap.

A steam trap that can be changed from a common separating trap to a return trap, by simply changing the valve and one inner tube, is somewhat unique. Such a trap is made by E. J. Ryan, Danville, Ill., and is shown in the accompanying illustrations. The trap may be

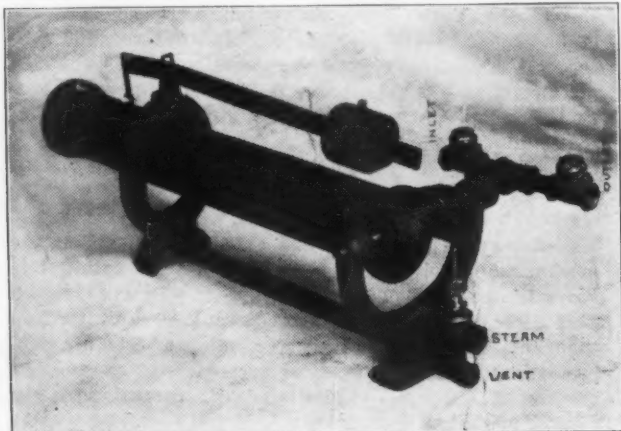


Fig. 1.—The Ryan Tilting Steam Trap as Used for Separating.

used on either high or low pressure and is a tilting trap, in the sense that it is operated by the weight of the accumulated condensation which causes the cylinder to tilt. It is not what is termed an "intermittent" trap, but is so arranged that the inlet is constant and the outlet is intermittent. The valve is a standard Jenkins disk globe valve, in which a new disk can be inserted at any time by removing one bolt and the valve bonnet, and when this is replaced the valve requires no readjusting. The outlet valve when closed is held by a powerful leverage.

When the trap is in operation the condensation enters

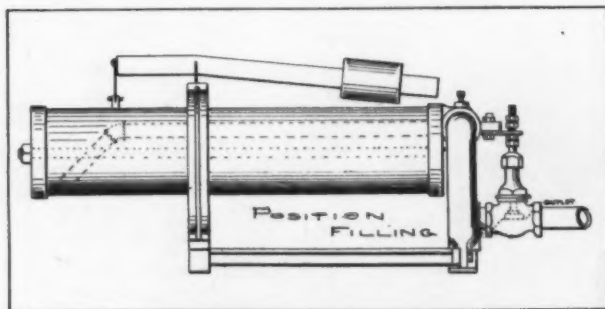


Fig. 2.—The Trap as Arranged for Collecting Returns.

the trunnion at the point marked "inlet," Fig. 1, filling the cylinder until the water overbalances the weighted lever. The suspended end of the cylinder then tilts down and in doing so causes the valve stem to be raised, allowing the water contained in the cylinder and the water reaching the cylinder during the time that it is tilted to be discharged through the outlet valve by the pressure of the steam at the inlet of the trap. In this way the trap provides for a sudden flow of water. Unlike most traps, it does not require an air valve, and it is said to be perfectly noiseless in its operation. The cylinder heads are held together by one bolt and the packing is recessed into the heads. This being of vulcabeston, can be used over and over again. The trunnions are packed with metallic packing and are practically indestructible.

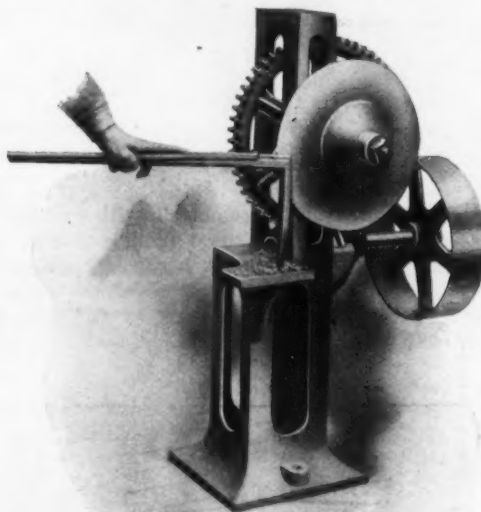
When the trap is installed it should be located at some point where it is accessible and preferably visible. While it does not require much attention, it is well to

have it where it plainly shows whether it is working properly or not. This is easily ascertained simply by watching it for a brief time, it being unnecessary to take the trap apart to discover whether it is in action or not. The trap should be set low enough so that all condensation will drain to it if possible. In cases where it is necessary to trap or seal the inlet before it reaches the trap an equalizing pipe should be provided so that steam can reach the inlet to the trap.

Fig. 2 shows the construction of the trap and also shows the connections where the trap is used as a return trap. In Fig. 1 the connections are such as are used where the trap is a common separating trap on a high pressure supply. Four sizes of the trap are made at present, these ranging in size of inlet from  $\frac{3}{4}$  to  $1\frac{1}{4}$  inches and in size of outlet from  $\frac{1}{2}$  to  $1\frac{1}{4}$  inches. The smallest, under low pressure, has a capacity of 45 pounds of water per minute and under high pressure 225. The largest has a low pressure capacity of 125 pounds of water per minute and a high pressure capacity of 625 pounds. These are equivalent to caring for 1300 square feet of radiation under low pressure and 7000 square feet under high pressure with the smallest size, and 4400 square feet under low pressure and 20,000 square feet under high pressure for the largest size of trap.

### The Murray Disk Sharpener.

The extremely simple and novel machine shown herewith, designed for sharpening disks, is manufactured by the Murray Iron Works Company, Burlington, Iowa. The



A Disk Sharpening Machine Made by the Murray Iron Works, Burlington, Iowa.

cutting apparatus consists of a pair of tongs with a roller on one jaw and a knife socket on the other. The jaw with the socket turns down at right angles and forms a support directly under the knife, while the support at the lower end is a perforated plate which permits of immediate adjustment to any size or any bevel of disk. The friction plate holding the disk is of cast iron, with wooden blocks dove-tailed in the face. The steel shaft is  $1\frac{3}{4}$  inches in diameter, and the disk is locked into place only 4 inches from the gear wheel. The machine can be operated either by hand or belt power. The machine complete weighs 325 pounds and requires a floor space of only 14 x 14 inches.

The Republic Iron & Steel Company and the Tennessee Coal, Iron & Railroad Company, which heretofore have carried a large amount of insurance on their properties, have decided to establish an insurance fund. It will be managed by H. W. Marsh of Burrows, Marsh & McLennan of Chicago and New York, who is also manager of the insurance fund of the United States Steel Corporation.

### The Buffalo Air Washer and Humidifier.

Considerable attention has been given to the need of some compact form of apparatus to prevent solid impurities from finding their way into buildings which are ventilated by fan systems. Shafts extending through the roof of required size for the inlet of fresh air are more often than not impracticable, and when air is taken at the street level and, as sometimes happens, through sidewalk openings, dust and filth enter the flues and find their way into the rooms. Cheese cloth screens to be effective must be frequently replaced, as they are quickly clogged up. The act of replacing shakes more or less of the dust loose and often the screens are thrown to one side, because the janitor finds it too much trouble to look after them. Obviously any arrangement to be effective must be automatic, and this is true of the Buffalo air washer, which requires less space than screens of cheese cloth or coke filters, is self-cleaning, and, by finely divided sprays, is claimed to remove all of the solid matter in suspension.

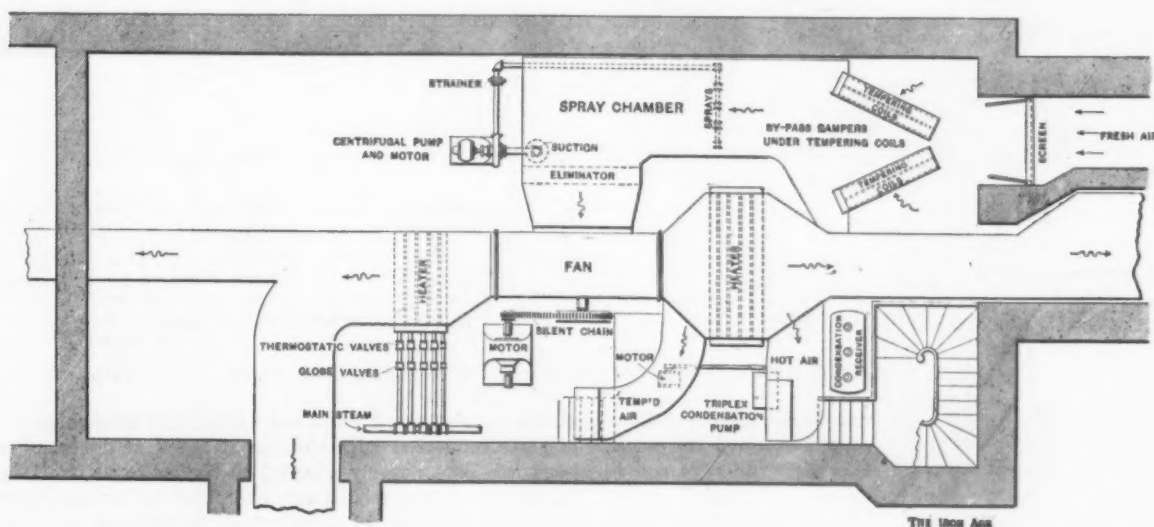
A typical arrangement of the Buffalo air washer and humidifier is shown in the accompanying engraving. This apparatus was finally perfected and patented a year

supplies the necessary pressure. The same apparatus is used for cooling in summer.

Medical journals have frequently called attention to the unhygienic dryness of the air in winter. The normal requirement is approximately 50 per cent. humidity, while in schools and office buildings this in cold weather is frequently below 20 per cent. With the form of air washer described the humidity may be readily increased and controlled so as to remove this important objection to steam or furnace heat.

### The National Metallurgical Company.

Contracts have been awarded to the Riter-Conley Mfg. Company, Pittsburgh, by the National Metallurgical Company, 43 Exchange place, New York, for the construction of a plant for the desulphurizing and nodulizing of iron ore. The plant is intended not only for the purification of iron ores, but for the elimination of water and the formation of the ore into irregular shapes to prevent waste from dust. The general adoption of the scheme in Pittsburgh, it is claimed, would free the city from the annoyance at present experienced by residents near blast furnace plants using fine Mesaba ores. Seven acres of land



An Air Washer and Humidifier in Connection with a Fan Ventilating System as Installed by the Buffalo Forge Company.

ago by the Buffalo Forge Company, Buffalo, N. Y., as a result of the excellent results obtained from installations in connection with fan heating and ventilating systems which had been in service for some time. It has been installed in schools, offices, hospitals, factories, restaurants, laundries, lithographing establishments and other buildings where pure air of uniform humidity is particularly desirable.

The air washer consists of a system of closely spaced spray nozzles, galvanized iron or copper baffle plates, eliminators for removing the water in suspension and the necessary casing and tank to make the apparatus air and water tight, clean and economical in operation and automatic, so far as any attention is concerned, except starting up the circulating water for the sprays whenever the heating system is put in operation. Patented spray nozzles are used, which instead of throwing the water in sheets separate it into an impalpable mist and are so designed that they will not clog up. The water-laden air impinges on zigzag continuous plates, which are constantly covered with a film of moisture.

By atomizing the water the amount which is required is minimized, and as all the water returns to the settling tank it may be recirculated. The extent and arrangement of contact surfaces are such that the resistance to the flow of air is negligible, and it is so compact that the whole apparatus takes up little more space than a bank of fan system heating coils. The baffle plates cleanse themselves, all the dirt passing to the settling chamber. City water pressure may be used for the sprays, or, when the water is recirculated, a small centrifugal pump

adjoining the Pittsburgh filter plant at Aspinwall on the Allegheny River have been purchased, and ground will be broken in a few days for a large group of buildings. The initial plant will have two rotary kilns, giving a capacity for treating 250 tons of iron ore daily, and the main process will be conducted in a steel building, 80 x 140 feet, which will contain the kilns. Side tracks have been laid from the West Penn Railroad, and contractors have begun the erection of trestles to enable the unloading of material for the construction of the plant.

The National Metallurgical Company now has a one-kiln plant in operation on the Hackensack Meadows, N. J., is just completing two other kilns there, giving a total capacity of 375 tons of nodules a day. The output of this plant for the present year has been sold to B. Nicoll & Co., New York, and a considerable portion of the tonnage so taken will be used at the furnace of the Andover Iron Company, Phillipsburg, N. J. Already 5000 tons have been smelted at this furnace.

Several arrests have been made in New York City for violation of the law making it a misdemeanor to burn soft coal within the city limits. Two hotel managers are among those arrested. They claim that since the anthracite strike it has been impossible to obtain anything but soft coal in the quantities needed for their power and heating plants. The campaign against smoking chimneys was started before the beginning of the strike and several important power plants have been receiving the attention of the Health Commissioner.



### The Pennsylvania Railroad's Hudson River Tunnels.

All speed records in tunnel building, says the New York *Herald*, will be smashed by the O'Rourke Construction Company, which is boring the Pennsylvania Railroad tubes under the Hudson River. Begun in February, 1905, the tunnels will be finished inside of three months, which will be more than a year sooner than the time specified in the contract.

Floods of inquiries are daily being made concerning

### Indianapolis Track Work for Industrial Purposes.

For the convenience of works railways in procuring satisfactory track work that will meet their special requirements the Indianapolis Switch & Frog Company, Springfield, Ohio, has a consulting engineering department for furnishing plans and information to this trade. When necessary the company sends its engineers and makes detail surveys, so that manufacturers whose

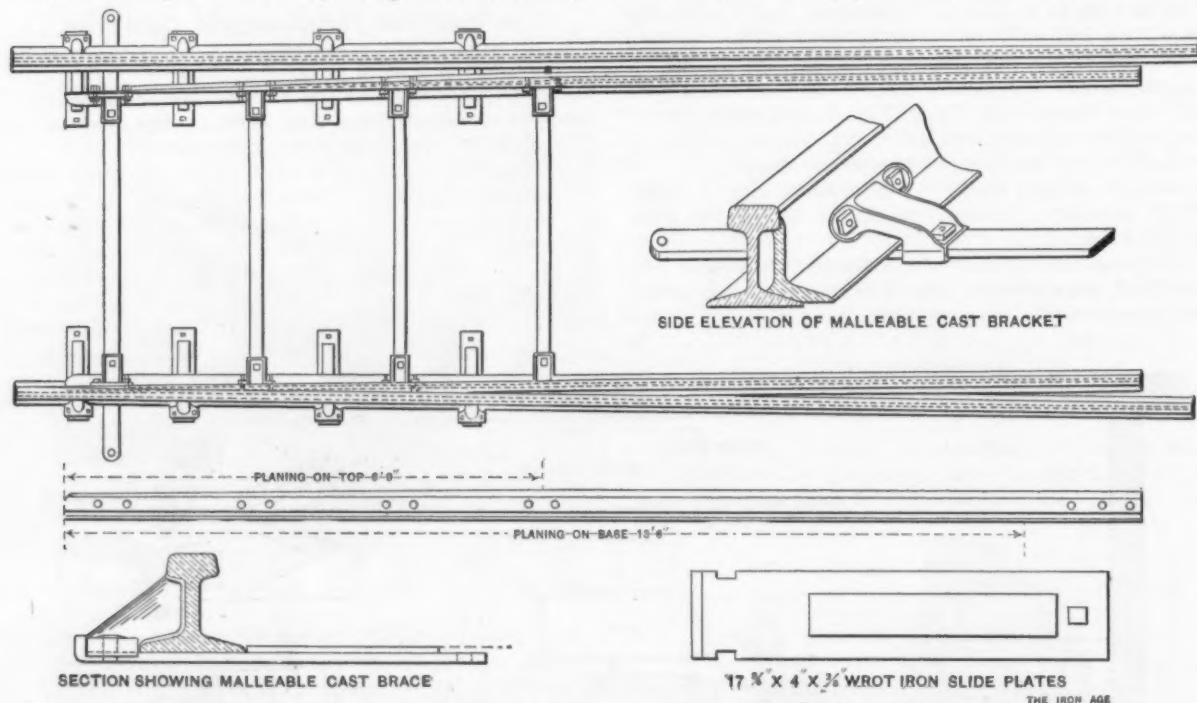


Fig. 1.—Standard 15-Foot Split Switch Made by the Indianapolis Switch & Frog Company, Springfield, Ohio.

the methods which make such remarkable speed possible. No details will be made public, however, until the work is completed and the company relieved from all responsibility. In the contract there is a provision which states that in no circumstances shall the company furnish any information concerning the work. Asked to comment on their methods, engineers connected with the O'Rourke Company said that when the time comes they will make public much that will interest engineers all over the world. New devices and new methods for boring which will be of inestimable value in all future tunnel work have been discovered, it is said.

Only 300 feet, approximately, now intervene between the headings, and within a month it is expected the

plants require track work may avoid the annoyance and expense connected with the use of frogs, switches, crossings, &c., not properly adapted to the rolling stock. The same care and precision are exercised in making industrial equipment as in standard steam railroad construction, taking into consideration the special requirements in each case, the result of which has been that some of the larger interests, especially mining industries, have in use over 1000 frogs and switches of this company's make, large consignments being furnished to Mexican properties.

Fig. 1 shows the standard type of split switch for rail from 40 to 100 pounds per yard, and a similar design, but with lighter fittings and shorter rails, is used for rail from 16 to 35 pounds per yard. Switch points are planed to give the greatest easement at approach and to have perfect side and base bearings, reducing the chance of derailment. These points are fitted complete with lugs, braces, slide plates and tie bars ready to install.

Fig. 2 illustrates the usual form of rigid or stiff frog

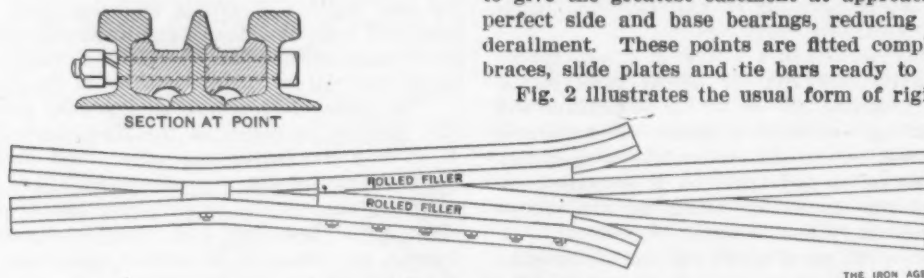


Fig. 2.—Details of a Rigid Frog.

tubes will be almost joined. Encouraged by the swift progress of the work, the engineers in charge of it are bending energy to complete it in the shortest possible time, so that a record for tunnel building may be established.

Boring from the New York side of the river started at Eleventh avenue, although the tunnel proper will have its beginning at Tenth avenue. Under the river the engineers encountered rock and shale, but chiefly mud. Work on the two tubes progressed with about equal speed. They run 25 feet apart. The plan is to have one track in each.

of the bolted and filled design. The throat is made of the proper width to accommodate the maximum wheel flanges and tires, the throat being filled throughout with solid rolled steel filler and the frogs assembled with extra heavy bolts provided with special head locks, preventing the bolts from turning. The nuts are equipped with positive nut locks, by which the parts are held firmly together, reducing the cost of maintenance and prolonging the life of the frog. This design of frog is usually made from rail weighing from 40 to 100 pounds per yard, and for lighter sections of rail the filling is omitted and all of the rails are securely riveted to heavy plates.



Fig. 3 illustrates the regular type of two-rail crossing, which is constructed along the same general plans as rigid bolted frogs, and the parts are so assembled that the work is practically self contained, relieving bolts and corner irons of all direct strain.

The company's headquarters is located at Springfield, Ohio, and its main plant consists of a building covering over two acres of space under one roof, fitted with modern equipment for making track work for steam and electric railways and mine and industrial tracks.

### High Carbon Steel Bars for Reinforcing Concrete.

The Inland Steel Company, First National Bank Building, Chicago, is now manufacturing high carbon steel bars, either plain or twisted, for reinforcing concrete, having an elastic limit greater than 50,000 pounds. Tests of the plain bars have shown that they usually run from 55,000 to 70,000 pounds per square inch, and twisted bars from 65,000 to 80,000 pounds. The sizes run from  $\frac{3}{8}$  to 1 inch, in rounds and squares, the bars in the smaller sizes running highest in elastic limit. The twisted bars

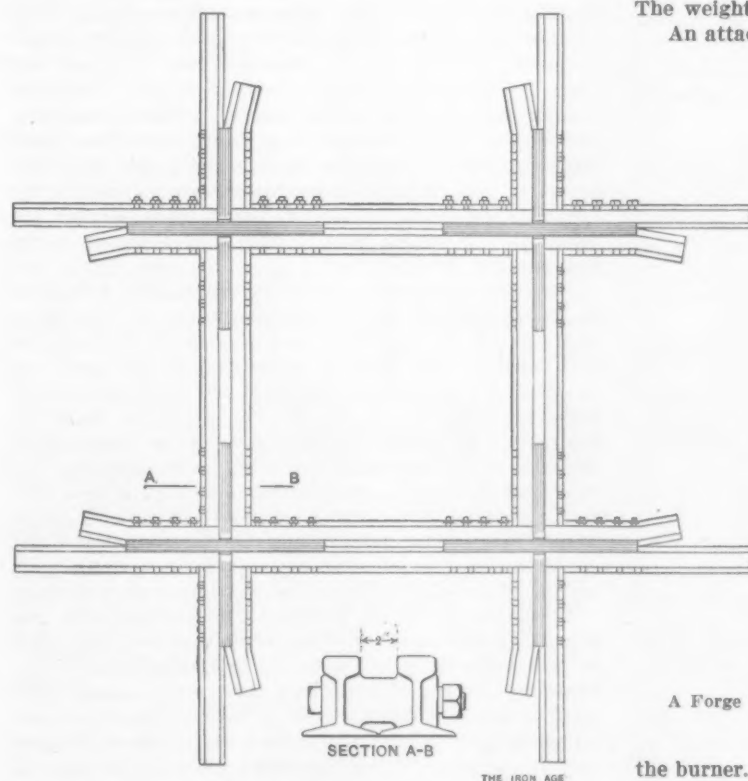


Fig. 3.—The Regular Type of Two-Rail Crossing.

reach a higher limit than plain bars of the same size and weight and are therefore of more value to the extent of the difference in that respect, but have a further advantage in the mechanical bond in twisted steel, which by many is considered indispensable. The company has issued a circular regarding these bars, from which the following extract is taken:

The measure of value of steel for the reinforcing of concrete is its elastic limit. The results of physical and chemical tests made during the past few years show conclusively, and we believe it is now the universal opinion among engineers in all branches, that steel having a high elastic limit, 50,000 pounds per square inch and over, is the best grade for this work. The elastic limit, or yield point, of steel is its real reinforcing strength. The tensile, or ultimate, strength has very little to do with its availability for this purpose. As compared with mild or medium steel having an elastic limit of 30,000 to 35,000 pounds per square inch, high carbon steel will give greater reinforcing strength, or a smaller quantity can be used and an equivalent result obtained. While high carbon steel sells at the same price as mild or medium steel, it is really worth more to the extent of the difference in the elastic limit between the two grades. In this particular use it would therefore be worth 3 cents per pound as compared with 2 cents per pound for mild steel bars.

Flat bars and sections, tees, angles, channels, &c., are also supplied by the company in all sizes.

### The Burke Oil Forge.

A forge for general machine shop use, designed to use coal oil or kerosene, has been developed by The Burke Machinery Company, Cleveland, Ohio. The first of these forges were made with cast iron bases, but since then galvanized steel tank bases have been substituted, which reduce the weight considerably. The forges are claimed to be economical, clean and easily operated, and being self contained they can be moved from one part of the shop to another. They are made in four sizes, with 1, 2, 3 and 4 burners, respectively. The largest has a capacity of  $5\frac{1}{2} \times 4\frac{1}{2} \times 18$  inches. To furnish the amount of heat necessary for ordinary work each burner consumes 2 gallons of oil per day of ten hours. The forge affords a means of hardening high speed steel by the use of special fire brick placed inside the forge and is able to harden high speed cutters at least  $\frac{3}{4}$  of an inch square by 3 inches long. The melting pot, which sets in the top of the forge, will hold sufficient babbitt or lead for ordinary use, and is easily heated to the necessary degree. The rear and front openings are closed with fire brick pieces. The interior dimensions of the forge illustrated are  $5\frac{1}{2}$  inches wide,  $4\frac{1}{2}$  inches high and 9 inches deep. The weight is 170 pounds.

An attached pump gives the air pressure necessary for



A Forge Using Coal Oil or Kerosene, Made by the Burke Machinery Company, Cleveland, Ohio.

the burner. In starting the forge it is necessary to pump up the pressure to at least 40 pounds. The higher the pressure the more intense the heat. Caution should be exercised that the oil does not contain any gasoline, as the heat of the burner is so great that it will burn the gasoline inside of the coil and stop up the coil so that nothing can get through.

This forge is specially useful where coal is scarce, where cleanliness is desired, or where a portable forge is wanted. One filling with oil will suffice for a whole day's work. The company also manufactures a rivet heater, using a special top mounted on the same base. This has a magazine feed and has been found capable of heating from five to seven  $\frac{5}{8} \times 1\frac{1}{2}$  inch rivets per minute.

The De La Vergne Machine Company, East 138th street and the East River, New York, states that 157 Koerting two-cycle gas engines, aggregating 131,685 horsepower, are in operation or in course of construction at the present time. Since last October the Koerting Bros. Company, Koertingsdorf, Germany, has closed contracts for 17 two-cycle gas engines, ranging in size from 300 to 2200 horse-power, to be installed in various parts of Europe. Several of these are repeat orders, showing the success with which the large gas engine is meeting in Europe.

## Domestic and Export Prices of Steel.

### Testimony of Chairman Gary of the United States Steel Corporation.

WASHINGTON, D. C., April 17, 1906.—Chairman E. H. Gary of the Board of Directors of the United States Steel Corporation appeared before the House Committee on the Merchant Marine and Fisheries on the 11th inst. in response to a request for information as to the relation between domestic and export prices of steel products in the United States and the leading steel producing countries of the world. The committee has under consideration the Shipping bill, and the inquiries addressed to Judge Gary bore chiefly upon the alleged advantage enjoyed by foreign shipbuilders in their ability to buy steel plates and other material cheaper than builders in the United States. A feature of the hearing was a discussion of the probable effect upon the steel industry in the United States of the removal of the tariff, especially on steel rails, which was strongly opposed by Judge Gary on the ground that this country would be used to a greater extent as a dumping ground by foreign manufacturers. He thought the companies outside the United States Steel Corporation would suffer most severely by the removal of the tariff, as they were not in position to manufacture so cheaply or command so steady a market for their output.

Chairman Grosvenor stated to Judge Gary at the outset that the committee was interested in ascertaining the truth "regarding the reports constantly published in the newspapers that the United States Steel Corporation sells its products of steel manufacture, notably plates and other parts of ships and railroad iron and steel, to foreign countries cheaper than in the United States." In reply, Judge Gary said:

"I am quite ready to give such information as I have that is pertinent to the inquiry. Perhaps I ought to refer specifically to a statement made by James C. Wallace of Cleveland, Ohio, president of the American Shipbuilding Company, which I find in the report of the Merchant Marine Commission, of the testimony taken at its hearings. Mr. Wallace said: 'Recently one of our largest steel mills sold abroad 100,000 tons of steel plate. They delivered it, I understand, at Belfast at \$24 a ton.' Subsequently, in reply to a question by Mr. Grosvenor, Mr. Wallace said that the plate was purchased by Harland & Wolff of Belfast, Ireland, from the United States Steel Corporation. I notice that Mr. Wallace apparently speaks from information. If he had such information it was unreliable. The statement is not founded in fact. The companies in which we are interested sold no ship plate in 1905 to Europe, only a little over 3000 tons in 1904, not any in 1903, and, I think, not any in 1902. That which we sold in 1904 was in small scattering lots.

#### Export and Domestic Prices Nearly Equal.

"Now as a matter of fact the export prices of ship plate at the present time are nearly equal to the domestic prices, and that is true of most of the commodities produced by our corporation. It is also a fact that the domestic prices of the manufacturers of the steel producing countries are generally higher than our domestic prices or the domestic prices of the manufacturers of this country. It is also true that the export prices of the manufacturers in foreign steel producing countries are about the same as the export prices of the manufacturers in this country. It is a fact, however, that it is the policy of manufacturers generally throughout the world to sell at times a limited portion of their output for export at prices lower than the domestic prices.

"The particular reason for that is well understood. It is for the interest, I think, of the domestic consumer at times to have surplus commodities sold for export at prices lower than the domestic price, for the total result is to reduce the price to the domestic consumer. It is well understood in manufacturing circles that the manufacturing cost of factory products is materially less if the factories are operated to their full capacity. Therefore the manufacturer seeks to keep his mills fully em-

ployed—in full operation. He does that for two reasons: First, to produce at the lowest cost; and second, to keep all of his employees at work all the time. Sometimes in order to keep his mills fully employed there is a surplus product; the product is larger than the domestic consumers will take. That surplus is sold for export wherever it can be sold. The foreign country in those cases has been termed a dumping ground.

#### Demand for Steel Increasing.

"Of course if you sell abroad you must meet the market there. At the present time, however, the prices, as I have said, are pretty nearly alike. Conditions have been improving for two or three years. The domestic demand has been increasing and the demand in foreign countries has improved also, so that the prices there are better. At the present time we are shipping abroad about one-twelfth of our entire output to Argentina, Japan, South Africa and various other neutral countries. Very little of our product, comparatively, goes to steel producing countries. In those countries to which we sell we come in competition chiefly with Germany, Belgium, Austria and to some extent Italy. Germany, Austria, France and Italy are very well protected. They have larger and better protection than we as a rule, and Germany, as you probably know better than I, pays pretty liberal bounties on the manufactured products that are exported. Of course they produce over there at pretty low cost, for labor is cheap."

In reply to a question by Representative Littlefield as to whether American manufacturers enjoy as good facilities for direct communication with South and Central America and Oriental ports as the Germans and the English Judge Gary said that he could not answer positively offhand, but he thought American exporters labor under a decided disadvantage. As to the shipping facilities to the Argentine Republic, he thought his company sometimes had considerable difficulty, a fact that was also true with regard to South Africa. As to freight rates, there was considerable fluctuation, the cost of shipment depending at times very materially upon whether the vessels going out could secure return cargoes.

With regard to the tariffs of South American and South African countries, Judge Gary said that they must be reckoned with in all cases. As to African ports, it was necessary to bear in mind that there was a preferential tariff in favor of Great Britain. Replying to a question, Judge Gary said that the United States Steel Corporation at the present time controlled about 60 per cent. of the output of steel ingots. Representative Littlefield then asked:

"Please state whether or not you have the knowledge to enable you to say what the fact is with reference to the other 40 per cent., as to the proportion of their output which has been sold abroad during the period covered by your statement regarding the United States Steel Corporation."

"I have not the same knowledge of the proportion of others," replied Judge Gary, "but I think ours would be a little larger. That is my judgment. But our export business is small compared with that of some other countries. Germany, for instance, exports at the present time about four times as much as we do, and England, I think, ships abroad about twice as much as we ship."

"Do you think that as much steel comes into this country from the other steel producing countries as your corporation and the other steel producers, ship out of this country?" asked Representative Hinshaw.

"I would only be able to estimate that," replied the witness. "But I do not think so. Of course, we are pressing this export business as far as we can practically for obvious reasons; among others, because we want a place to put our goods, as it so materially affects the employment of our labor and also because it so materially affects the balance of trade. The broad view of this ques-



tion is that when we can justly do it—when we can fairly do it—we want to bring all the foreign money we can into this country. We are all interested alike in that.”

“Steel rails enter into the figures that you have already given us, I suppose?” suggested Representative Littlefield.

“Yes. I think the average price of export steel rails at the present time is almost equal to the domestic price. The present domestic price is about \$28 per ton, and I should, say, slightly under \$27 for foreign trade. The prices that I have quoted are f.o.b. the mill in all cases.”

“If you did not have this avenue of export trade by which you could dispose of the surplus product, which is in excess of the domestic demand,” said Representative Littlefield, “you would either have to stop producing and therefore lose the use of your mills and sustain a loss in that respect, or you would have to carry the surplus product on hand until the demand was created for it elsewhere?”

“Yes; but I do not think it would be practicable to manufacture and carry the surplus; it runs into money so fast. I think we would have to shut down our mills, and you know what that means in the disorganization of forces. So it really comes to this: That we would be obliged to increase the cost of manufacture if we could not run at full capacity. That would be the inevitable result.”

“I would like to ask you this question,” said Representative Spight: “Has your company ever delivered your products in foreign yards at a cheaper rate than you sell to the domestic customer at your mills?”

“The United States Steel Corporation is not an operating company,” replied Judge Gary, “but I suppose you refer to our subsidiary companies. I have already stated that we have sold some of our products for export at certain prices, but those prices were f.o.b. the mill, and we have never delivered our products abroad for less than the cost to the domestic customer at our mill.”

“Do you know of any steel company that has delivered goods in foreign yards cheaper than they sold them at the mill to domestic customers?” “I do not. I know of no such case.”

“About what is the freight on steel from your mills to England?” “At the present time, about 10 shillings per ton.”

“So that if the price is \$27 per ton, f.o.b. at your mills, with the freight added, it would be \$29.50, at English ports?” asked Mr. Hinshaw. “Yes.”

“And what is the price of steel there, f.o.b. their mills?”

#### Foreign Prices Compared.

“It depends upon the commodity. The Great Britain home price of rails, for instance, is \$31.50 per ton, and the export price of Great Britain is \$25, f.o.b. their mills. In Canada the home price of rails is \$33, and the export price the same; in Germany the home price is \$30, the export price \$24; in France the home price is \$31, and the export price \$25.50; in Austria the home price is \$31, and the export price \$25.50; in Belgium the home price is \$30, the export price \$24; in United States the home price is \$28, and the export price about \$26.60. There is less margin in this country than anywhere else, and the home prices abroad, you will observe, are invariably larger than our home prices.

“Now, take structural material, including shapes, plates, bars, angles and tees—in Great Britain the home price is \$1.60 per 100 pounds, and the export price \$1.35. In Germany the home price is \$1.50, the export price \$1.25. In France the home price is \$1.65, and the export price \$1.35. In Austria the home price is \$1.50, and the export price \$1.35. In Belgium the home price is \$1.55, the export price \$1.35. In the United States the home price is \$1.60, the export price \$1.40. Our price of plates lately has slightly increased because of the demand. Our customers generally, however, are covered for the season at about \$1.40. These figures are taken from authoritative sources, and I think there is no doubt that they are reliable. They are the figures upon which we are doing our business right along every day.”

“Do you sell to the foreign customer upon orders re-

ceived by mail?” asked Chairman Grosvenor, “or do the agents of the foreign buyer come here? What I am trying to get at is this: If you have sufficient demand for all of your products do you sell abroad at all, or do you only sell abroad when you can supply both demands?”

#### Soliciting Foreign Trade.

“Answering the first part of your question,” replied the witness, “I would say we have some agents abroad to take care of the field for us, and who receive orders. We also receive orders here at home. For instance, the Japanese have been pretty good customers and have had representatives in this country. They pay cash in advance, and come to our office and do their business. Answering the other part of your question, I would say that, of course, it is our policy from a business standpoint to take care of our own customers first. In looking after their interests we think it is wise to keep a foothold in the foreign countries—not to lose our connection with the foreign business; and therefore when the demand is very great we sometimes sell abroad to some extent at a little sacrifice so as to keep our position. But so far as we can maintain our business relations abroad we take care of our domestic producers first.”

“Is there any arrangement between your corporation and the others in your industry by which the price of the domestic product or of the foreign product is fixed in the markets of the world?” asked Representative Hinshaw.

“With reference to certain commodities the representatives of some of the leading companies have heretofore been in the habit of getting together for consultation, with a view to determining what should be the prices. In view of the criticisms which have been made from time to time and of published reports, which were in a large measure inaccurate, that practice has been to a large extent abandoned. It is a fact, however, not disputed, that with reference to a few commodities—perhaps a very few at the present time—the presidents of corporations outside are in the habit of coming to our office for consultation with reference to prices; I do not mean as a regular thing, but with a view of keeping so far as it is fair and right in close touch with the situation, and in that way no doubt the prices in some of the commodities at least have been better maintained. We do not always agree. Sometimes we disagree very seriously and emphatically. The effort of our organization has been to steady prices; to prevent extraordinarily high prices or extraordinarily low prices. There have been times when the outside manufacturing corporations to which you refer have insisted that the demand justified very materially higher prices. That has been true particularly during the past year. For instance, it would have been a very easy matter to sell rails at a very much higher price than \$28 during the last six or eight months. It would be a very easy matter now. But our corporation with all its influence has steadily protested against that and has taken a very decided stand that we would not consent to it, and that if any other manufacturer sold at a higher price we would still sell at the lower price. I am very glad to say that the other corporations in considering the question have decided that that was the fair thing to do, and so far as I know they have kept these prices down. That is true of other commodities from time to time.”

“At the present time are you shipping rails to any foreign country?” asked Representative Wilson.

#### Heavy Demand for Rails.

“To a very limited extent we are exporting rails, but only for the purpose of holding our position abroad. The domestic demand for rails at the present time is far in excess of the capacity to supply them, and of course we prefer not to sell any rails abroad just now. At other times, when the market is dull, the tendency is the other way. Our disposition is to maintain parity of prices so far as we can. The consumers like it better. The average consumer is very much more interested in having prices maintained so that there shall be no extremes—either up or down—than in having very high prices sometimes and very low prices at other times. Then he knows what to do with the goods which he purchases. He knows what



prices to make to his customers. I think you will find that to be the testimony of our leading customers, like the Cramps, for instance. I think they would rather have us establish and maintain a fair price than to run the risk of having our prices very high at times, even though very low at other times.

"You may remember that in 1903 there was a tendency to lower prices, and yet I think our influence was valuable in maintaining prices, or at least in preventing the market from going to pieces. Prices were lower, however. We are in sharp competition all the time and we take care of our customers. We have to meet prices. Our prices at the present time are very materially lower than they were in 1902. We have constantly reduced prices a little, although we have restored our wages and kept them up to about the same figure. If our prices in 1905 had been as high on the average as they were in 1902 I think it will surprise you to learn that our earnings during 1905 would have been at least \$50,000,000 more than they were."

#### Profit on Rails.

"Considering the cost of labor and the material which you must buy or produce from your mines, is \$28 per ton for steel rails a fair price, or is it exorbitant? Would it render a revenue out of proportion to a proper valuation?" asked Representative Hinshaw.

"I think the price is moderate. When you take into account the amount in dollars and cents of our business for a year—last year, 1905, it was a little under \$600,000,000—you will find that the percentage of earnings was materially less than the percentage of earnings of the principal railroad lines on the same basis. If you take the New York Central, the Pennsylvania, the Illinois Central, the Chicago and Northwestern and other great roads you will find that our earnings were less than theirs in proportion to the amount of business involved. I think you will also find when you take into account the actual selling value of the properties which we own that our earnings are not a large return on the properties. And while we deal in large figures and show very large earnings, it is chiefly, I think, because we have had the courage to expend very large sums of money all the time in the betterment of our properties, in the perfection of our machinery and in the completeness of our organization. We are endeavoring to manage our business in such a way as you would manage your individual business, however small or however large it may be. We are not at war with our competitors. We try to be friendly with all of them. So far as I know, we have never antagonized them except in self-defence. Of course, I do not mean to say that we do not take care of our customers. If our competitors in business undertake to get our trade away from us we take care of our customers and we meet prices, but we do not make war on our competitors. We seek to be friendly with them and we try to take care of our employees. That is our first thought and our constant thought."

"Then there is real, genuine, active competition between your corporation and the others that produce the 40 per cent. of the output of your industry?" asked Representative Hinshaw.

"Indeed there is."

"Would you mind telling us," asked Representative Wilson, "about the various presidents who meet in your office—the concerns they represent?"

"I have no objection," replied the witness. "They do not come as a body, but individually. They include, for instance, Mr. Stackhouse, president of the Cambria Steel Company; Mr. Felton, president of the Pennsylvania Steel Company; Mr. Wood of the Maryland Steel Company, and so on. I could give you the names of a great many. Our office is more or less headquarters and they are always welcome and they frequently come in. Of course, I would do the same thing if I were in Pittsburgh or Philadelphia or Baltimore."

#### Foreign Competition.

"How does the competition of England and Germany and other steel producing countries paying a tariff duty to get into the market of the United States affect you in selling to the domestic trade here? Does it give you a

monopoly or a practical monopoly of the American market, to the exclusion of these foreign factories?" asked Representative Hinshaw.

"Oh, no," replied Judge Gary. "At times they compete with us in such a way as materially to reduce our prices. Of course, it depends upon the time, and it also depends upon the circumstances which may prevail at the time. Germany, particularly, is very aggressive. So is Belgium. They use this country as a dumping ground probably to a very much larger extent than we would use theirs. They have high protection, and I have been informed they pay large bounties on export business. You know it is the policy of the German Emperor to take care of his country regardless of all other countries, and at times German manufacturers come into this country with very cheap goods. I should think that their tariff and their bounties together would very much more than offset our tariff. We have not sufficient information so as to be able to state accurately how much their bounties are, but I think they are pretty liberal at times. I know they come in here with very low prices."

"Is it not a fact," asked Chairman Grosvenor, "that in Germany and in many of the other foreign countries the tariff and the bounties can be regulated without any act on the part of the legislative body—that is to say, it can be done by order of the crown in a more or less private and confidential way?" "I understand so."

"Is it not also true that Germany and Belgium and France, as well, own their railroads in large part, so that in fixing their export bounties they are able to manipulate the freight rates?"

"They can do that with goods for export, and therefore, notwithstanding the tariff duty on steel products, we are brought into active, genuine competition with Germany and Belgium."

#### American Rails Superior to Foreign.

"How does their product compare with ours in quality?" asked Representative Goulden.

"I do not think the rails are as good on the average as our own by a considerable margin. It is a question of composition and of practice."

"Do you think any portion of the superiority of quality of the goods made in this country is due to the superiority of our labor? You know we are very proud of the skill of our American mechanics; we think they beat the world."

"I do not think it is so much the quality of our common labor as it is that of our very expert labor. I think our superiority is largely attributable to the fact that we have spent a great deal more money in perfecting our machinery. I presume some of you gentlemen have been in the mills in Germany and Great Britain and Belgium and in our mills, and if so, you probably have been surprised at the amount of money that we have expended as compared with the amount of money they have expended."

"I can understand," said Representative Goulden, "how your organization can regulate the maximum price of its products, but I am not quite clear as to how you regulate the minimum price."

"We do not," replied Judge Gary. "And we cannot. We do not expect to. We do try to influence it, so that the market will not go to pieces and disorganize our forces and shut down our mills and throw our men out of employment. We cannot regulate it, however, and we never expect to."

"I notice that in the matter of exports the foreign export prices and our export prices run about the same," said Representative Goulden, "and there almost seems to be a sort of uniformity in the difference between the export and domestic prices of steel products. How do you account for that?"

"The laws of supply and demand influence them," replied the witness, "but they are not about the same—that is, there is considerable difference. For instance, take billets—the export price in Austria is \$22 and in Belgium \$19.50. The export and domestic prices of steel rails are within a dollar or two of the other all the way through."

Replying to questions by Representative Littlefield,

Mr. Gary said that the duty on steel rails imported into Canada was the same as in this country, namely, \$7.84 per ton, and that in addition the Canadians paid a bounty and maintained a "dumping clause" equal to 50 per cent. of the regular tariff. Replying to Chairman Grosvenor, he said he knew nothing about the reports that American manufacturers had made sales of steel rails to be delivered in Canada during the past year at \$20 per ton.

"I find," said Chairman Grosvenor, "that we imported in 1903 \$51,000,000 of steel and manufactures thereof; \$27,000,000 in 1904 and \$23,000,000 in 1905. Have the exports, in your judgment, equaled the imports?"

"They have more than equaled them. I should say that our exports would approximate \$34,000,000 or \$35,000,000."

#### Effect of Cheap Labor Abroad.

"We are led to believe," said Representative Hinshaw, "that labor is much cheaper abroad than in this country, but how do you explain the fact that in the United States steel rails can be produced for domestic consumption at from \$3 to \$3.50 per ton cheaper than they are produced for domestic consumption in these European countries?"

"In the first place," replied Judge Gary, "the selling price does not prove anything, perhaps, as to the cost of production. These foreign countries may receive a larger profit than we do, and in the next place the perfection of our machinery and our organization enables us to produce at pretty nearly as low a figure in respect to many articles as they are produced for in foreign countries. That is not true of all products. For instance, I suppose that at Neunkirchen, in Germany, taking the cheapness of labor particularly into account, they can produce iron cheaper than we can. Of course they have a very decided advantage over us. They do not pay more than one-half our wages; and we think one of the principal things to have in mind all the time is to keep up the price of our labor. The cost of living is increasing a little all the time, and there are many reasons why the laborer should be entitled to as high wages as we can afford to pay."

"Would you mind stating what is the general price paid by your company for common laborers?" asked Representative Hinshaw.

"Without attempting to be exactly accurate, I would say at the present time from \$1.50 to \$1.60. In the case of skilled workmen the wages will range very much higher."

"On materials used in building ships for the foreign trade there is no tariff, or there is a drawback of the tariff," said Representative Hinshaw. "Now, is there any difference between the price which you make to the manufacturer of a ship for use in the domestic or coast-wise trade and the price which you make to one producing a ship for the foreign trade in this country?" "Not so far as I know."

#### Tariff on Shipbuilding Materials.

"The testimony given here by Mr. Cramp has been to the effect that he could purchase in this country the raw materials of iron and steel entering into shipbuilding as cheaply as they were sold to the shipbuilder on the Clyde or elsewhere," said Representative Birdsall. "Now, I take it that in this material, of whatever character it may be, you are able to compete with the foreign producer without reference to the tariff; in other words, that notwithstanding the price of labor you can produce it here as cheaply as it can be produced abroad?"

"I do not know as to that," replied the witness. "I would not want to answer that without further information."

"Can you state approximately the character of the goods that you are not able to produce here as cheaply as they are produced in foreign countries?"

"No; I cannot answer that question off hand. I have already referred to the subject of iron. Of course that is the foundation for the steel. That can be manufactured into semifinished products and finished products, perhaps of some kinds, at a lower price abroad than we could produce it, but I cannot give you the figures and I do not like to guess at them."

"Do you think that the removal of the tariff duty of \$7.84 per ton on steel rails would injuriously affect your

business, now so thoroughly established?" asked Representative Hinshaw.

#### Removal of Tariff Opposed.

"I have no doubt about it," replied Judge Gary with emphasis. "These foreign countries would immediately use this country as a dumping ground to a larger extent and bring rails in here and drive some of our manufacturers out of business. It would not affect us so much as it would some of our competitors, who are less able to meet competition of that kind. Our companies combined are stronger, better established, have the raw materials, can produce a little cheaper, and therefore have the advantage over our competitors. But I feel that we would be seriously affected and that many of our competitors would be driven out of business. I think that it would be a great injury to this country, particularly to the laboring element. That is my opinion."

"The export prices charged by the foreign countries to-day, plus the freight, would not enable them to compete with you successfully in this country, even if there were no tariff," suggested Representative Goulden.

"Oh, they would put down their export prices!" exclaimed Judge Gary. "In addition, they have export bounties."

"Do they have export bounties in England?"

"No, I do not think so. I do not think England can produce large tonnages at as low prices as Germany, by a good deal—such as rails, for instance. The mining of their coal is expensive and the veins are thin. They have poor grades of ore. They have to buy large quantities of ore abroad, in Spain and Sweden, and I think it costs them a good deal more to produce pig iron than it does in Germany, for instance. There are places in Germany where they have the ore and coal right together, so that their mills are right at their ore mines and they bring the coal not a very long distance in buckets over trolley wires. They use by-product ovens and utilize all their by-products; their labor is very cheap and they produce at very low cost. They have to import some ore to mix with their native ores, but they make a basic iron that is very cheap and very good. I think they have a very decided advantage over England."

"We do not have to import any ore, do we?" asked Representative Goulden.

"We buy a great deal of manganese ore from Russia and other foreign countries."

"The removal of the tariff entirely would have a tendency to cause the formation of an international trust for the maintenance of uniform prices through the world, would it not?" asked Representative Birdsall.

"Well, it might be so," assented the witness. "I could not say that that would probably be the effect; I do not know. That is a political question that you know a great deal more about than I do, I am sure."

#### An "International Trust."

"Is it not a fact that the refusal of American manufacturers to go into an international trust is all that stands in the way of the formation of such a combination?"

"My opinion, which may not be of much value," replied the witness, "is that these foreign countries generally know enough to take care of themselves and that they will do it. They are not at all interested in this country. There is this difference between Germany, for instance, and the United States: the policy of this country is firmly established against monopolies, as it ought to be, and against anything and everything that tends to monopoly. But the German Emperor will do anything he can to establish a monopoly and maintain it, if he believes it is really for the benefit of his country, if he really believes it will bring more money into Germany."

"Is there a country anywhere in which what we term artificial stimulation, or Government aid, is employed to the extent it now is in Germany?" asked Representative Littlefield.

"No, I think not," replied the witness. "I think that at the present time Germany is a very progressive country, and is the country that is taking care of its own industries particularly, and against which we must protect ourselves. The Germans have no limit upon the



manner in which they may protect their industries, and they are rapidly increasing in strength. They would not like anything better than to see the tariff removed by this country."

W. L. C.

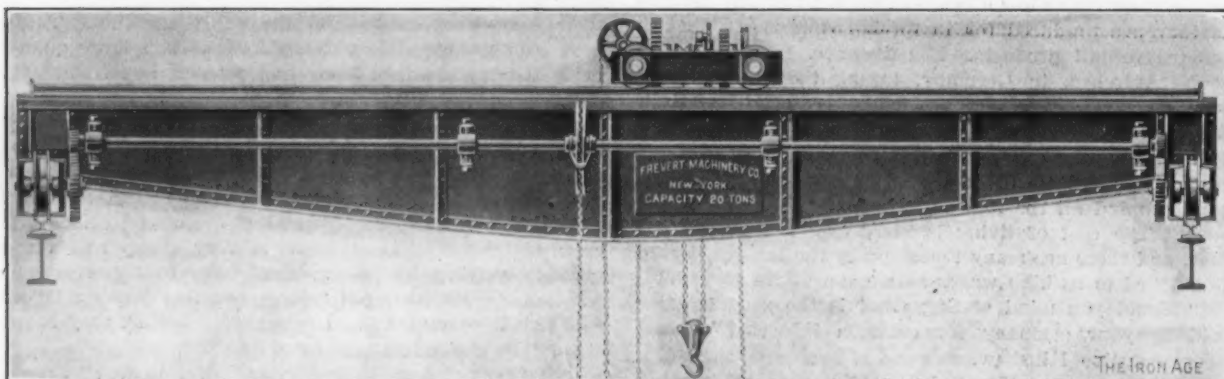
### The Frevert Hand Power Traveling Crane.

In many locations where a crane is used only infrequently, or where for other reasons a power crane does not seem justified, a hand crane offers a very satisfactory substitute. The illustration shows a hand power traveling crane recently put on the market by the Frevert Machinery Company, 18 Dey street, New York, which is constructed, as far as possible, of standard parts easily duplicated.

The bridge is composed of steel I-beams or of built-up steel plate girders, depending upon the span and load capacity. The trucks consist of steel girders of box section, heavily reinforced at the ends for axle bearings, and connected by body bound bolts to the girders or I-beams of the bridge. They are fitted with double flanged chilled iron truck wheels having ground treads. The trucks have a large wheel base, the wheels being keyed to extra heavy axles fitted with steel roller bearings. The bridge travel gearing comprises a squaring shaft with cut pinions on the ends engaging cut gears on the truck wheels. A

The reason for placing such orders in other countries, instead of in Great Britain as heretofore, was asked. In reply it was stated that while there was no official information on the subject it had been rumored that an arrangement had been made by an international rail syndicate for the division of the world's market for rails, and under this agreement British railmakers were to be secured, with some exceptions, against foreign competition in the markets of the British Empire, while American manufacturers were to be exempt from such competition in North and South America.

**Westinghouse Machine Company Changes.**—Several changes among this company's officials were announced last week. The number of vice-presidents has been increased from two to four, and E. H. Sniffin and Arthur West have been elected to fill the new offices of third and fourth vice-presidents, respectively. Mr. Sniffin will have charge of the sales department, as heretofore, and Mr. West, who has been chief engineer, will retain that title and position. The new offices are due to the rapid expansion of the business of the company and the enlargements of its plants. William A. Bole, in consequence of his election to the vice-presidency of the Westinghouse Foundry Company, has resigned his position as manager of works of the Westinghouse Machine Company to bet-



A Typical Example of the Frevert Hand Power Traveling Crane.

special design of adjustable bridge shaft bearing bracket is used for supporting this shaft. The shaft insures the alignment of the crane so that it will travel uniformly—that is, constantly at right angles with its runways, securing ease of operation and preventing the crane from binding.

The trolley frame is built up of steel shapes and is also fitted with double flanged chilled wheels keyed to heavy steel axles running in roller bushed bearings. The hoist is built in the trolley and is of the spur geared type of improved design. It is very powerful and has large wearing surfaces. An automatic friction brake sustains the load at any point of the lift. A slight pull on the hand chain in the opposite direction enables the operator to lower the load easily and steadily. In addition, these hoists are fitted with a brake release to lower the load rapidly. The release is operated from the floor by a hand chain attached to a lever, which controls the brake and is always operative in its action. Cut gears milled from solid steel blanks are used throughout. A lower block is furnished with a bronze bushed bearing, which enables the hook to swivel freely. At all bearing points friction has been reduced wherever possible by the use of roller bearings, and all parts of the crane are made interchangeable.

### A Parliamentary Inquiry About the Rail Trade.

In the British House of Commons recently the President of the Board of Trade was asked whether he knew that orders for over 100,000 tons of rails had recently been placed in the United States by British controlled Argentine railroads; also whether he could state what quantities of rails and steel ties for these Argentine railroads had been purchased from German and Belgium mills.

ter serve the interests of the Foundry Company. The Machine Company, however, retains Mr. Bole as consulting engineer. Henry L. Barton, formerly general superintendent of the East Pittsburgh works of the Westinghouse Machine Company, has been appointed manager of works, to succeed Mr. Bole.

**The Pittsburgh Gage & Supply Company's Expansion.**—This company has just bought a plot of land located at Liberty avenue and Thirtieth street, Pittsburgh, on which it will build a six-story and basement steel and concrete structure building for manufacturing purposes. The new plant will be most modern in equipment and will have direct switching connections with the Pennsylvania, Baltimore & Ohio and Pittsburgh Junction railroads. The offices and warehouse, now on Water street, Pittsburgh, will be moved to the new building when it is completed. This company operates a brass and iron foundry, machine shops, makes contracts for complete piping installations and also manufactures engineering specialties. W. L. Rodgers is president, R. F. Ramsey treasurer and J. Lee Rodgers secretary.

Electric drive has been adopted throughout the lumber mills of the Diamond Match Company at Chico, Cal., the special applications of the electric motor being in the handling of lumber and fuel. For the lumber there are installed induction motors aggregating 50 horsepower. A 20 horse-power motor unloads the green timber from the cars, a similar motor reloads the dried timber on cars as it is taken from the kilns, while one of 10 horse-power handles the green lumber prior to its distribution in the yards.



### A Bliss Special Feed Press.

The accompanying half-tone, Fig. 1, illustrates a Bliss inclinable power press, fitted with a special combination feed for producing hard brass springs of the form shown in Fig. 2. The metal is taken from a reel, and by means of a single roll feed is carried into the first die, which simply parts the stock and leaves the blank in the form shown at A in Fig. 2, on the top of the die and over a slide feed. This slide feed is operated by a lever connected to the back of the slide by a short link, as may be seen in Fig. 1. This lever has a fulcrum in the back brace of the frame. The lower end of the lever is connected to the die slide. The up and down movement of the press slide causes the lever to rock forward and backward and the die slide is carried with it. As the link con-

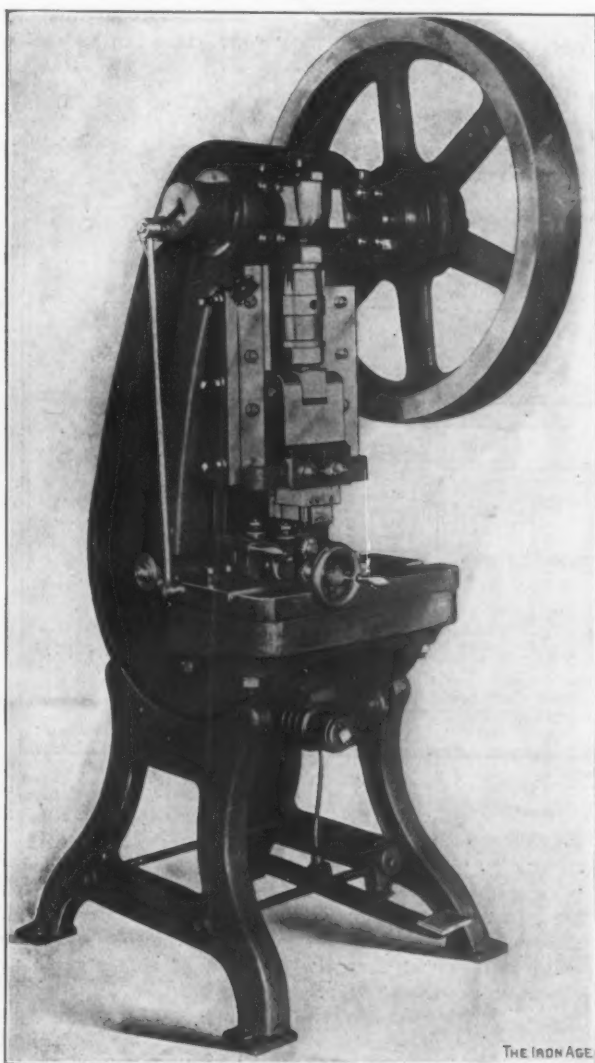


Fig. 1.—A Bliss Inclined Power Press with Special Feed.

nection passes over the center there is a short dwell in the die slide while the punch acts.

On the die slide are two pairs of spring hooks, the forward pair of which pass under the cut blank as the automatic slide moves toward the front of the press. Just before the reverse movement these hooks spring up and carry the blank to the second die, where it is formed, as shown at B in Fig. 2, and at the same time a second blank is cut. The second set of hooks then carry the first blank into the third die, which completes the article, as shown at D, Fig. 2, and it is automatically discharged. After the third operation a complete spring is produced at every stroke of the press, which makes about 70 strokes, or 210 operations per minute. The piece is formed in the die in the same position, as shown, there being a small mandrel which shapes the loop along which the piece passes, this acting as a gauge.

The third operation die is interesting, inasmuch as the punch consists of two pieces on separate pivots, each of

which is mounted a little off the center. The downward pressure of the slide causes these two pieces to swing in automatically, and then come out again with the up motion of the slide. On account of the stiffness of the stock and the necessity of having all pieces exactly alike with the proper set, a larger press is required than would

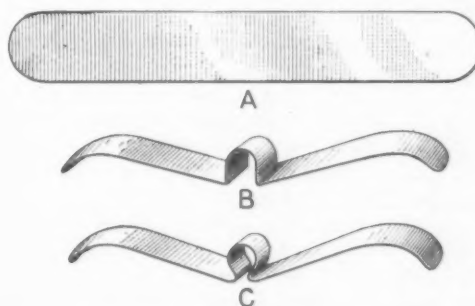
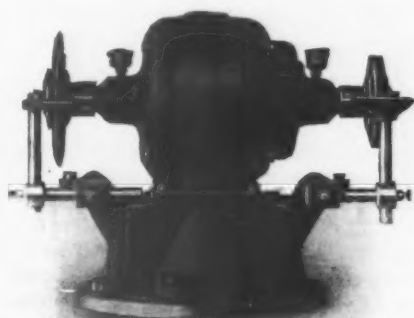


Fig. 2.—The Product in Its Three Stages.

otherwise be necessary, but the total weight of the machine shown is only about 2200 pounds. It is built by the E. W. Bliss Company, 11 Adams street, Brooklyn, N. Y.

### The Mechanical Appliance Company's Bench Grinder.

A motor driven bench grinder, especially adapted to hard and continuous service, has been designed by the Mechanical Appliance Company, Milwaukee, Wis. It is known as the company's type B bench grinder, and has the emery wheels mounted directly on the extended shaft of the motor. The wheels are designed to run at a speed of 3000 revolutions per minute, and the shaft carrying the wheels and the armature of the motor is mounted in bronze bearings having taper sleeve adjustment to take up wear. Provision is also made to take up the end thrust when a cup or disk wheel is used. The tool rests are arranged to be quickly adjusted for work either on the face or side of the wheels. An automatic starter contained in the base is manipulated by a handle projecting to the front so that the means for starting and stopping is in the most convenient location. The entire



Electric Bench Grinder Made by the Mechanical Appliance Company, Milwaukee, Wis.

grinder is mounted and clamped on a machined cast iron ring, permitting a swing of a quarter turn in either direction. The motor is of the inclosed type, hence is well protected from dust and mechanical injury. The grinders are built to run on either 110 or 220 volt direct current circuits.

The twentieth annual meeting of the Allis Mutual Aid Society was held at Milwaukee, April 9. Edwin Reynolds, consulting engineer of the Allis-Chalmers Company and one of the founders of the society, was re-elected president. Other officers elected are: H. Freeman, vice-president; William Garrison, secretary, and Charles Allis, treasurer. The society now has a membership of 1700, all employees of the Allis-Chalmers Company.

## Briquetting of Fuels and Minerals.

### Description of the Zwoyer Fuel Company's Process and the New Jersey Briquetting Company's Plant.

BY G. J. MASHEK.\*

An experimental plant for manufacturing coal briquettes was built in Jersey City, N. J., some four years ago by the Zwoyer Fuel Company, for the purpose of trying a patented binder, which proved a failure. This plant had a capacity of 5 tons per hour and its equipment was designed by the author. After experimenting about a year with all known binding materials, the company finally adopted coal tar pitch or asphalt as being the only one that could be obtained in practically unlimited quantities and at a reasonable price. A process for applying the binder was developed, which consisted of atomizing hot melted pitch into a mixer containing the heated and dried cold dust. The object was to diffuse or scatter the pitch in a spray so as to cover each particle of coal with as thin a coat of pitch as possible, the mixer being speeded up in order to keep the coal dust in practically a suspended condition. This process produces good results when used on short mixers, and when less than 5 per cent. of pitch or asphaltum is used. In the two following years about 3000 tons of bri-

quettes were manufactured and sold, and this small plant was pronounced a commercial success. From the bottom of the dust bin the material is taken out by a conveyor run at a speed equal to the capacity of the press. The material from this conveyor then passes between a set of 16 x 36 inch crushing rolls, which are set to reduce it to the size required for briquetting. Next to the dust bin is an 80-ton soft coal bin, fitted to feed by means of another conveyor to a set of 4 x 19 inch rolls. This bin and set of

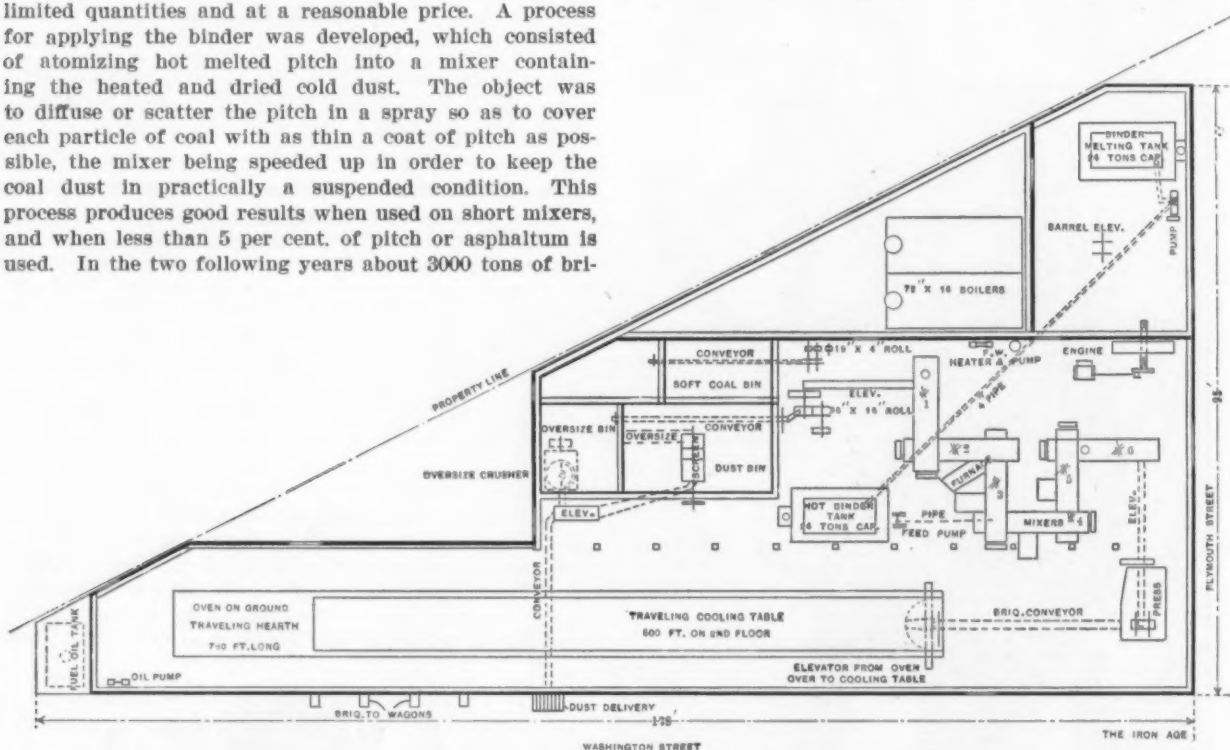


Fig. 1.—Plan of the New Jersey Briquetting Company's Plant in Brooklyn, N. Y.

quettes were manufactured and sold, and this small plant was pronounced a commercial success.

In the winter of 1904-05 the New Jersey Briquetting Company built a new plant in Brooklyn of 15 tons per hour capacity, equipped with improved and heavier machinery, a general plan of which is shown in Fig. 1. Owing to the limited space only a small storage room for dust was provided. It was the intention to use the pockets of an adjacent coal yard to store dust and briquettes, shipping the product from this yard. An overhead tramway was to convey the dust to the briquetting plant and take briquettes to the storage bin on the coal dock. Unfortunately after the plant was built the city took a strip of property between the plant and coal dock, so that this overhead tramway from dock to plant could not be used. The loss of this approach to the dock seriously interferes with the operation of this plant, owing to the expense and difficulty of getting the dust to the plant and the small storage capacity of the bins. The dust has to be hauled by wagons to a conveyor on the street side of the plant and the briquettes are hauled away in the same way. Small briquette pockets were built under the cooling table floor, holding about six hours' run of briquettes.

Referring to Fig. 1, the dust is conveyed from the sidewalk pit to an elevator, from the head of which it is spouted upon a screen placed over a 200-ton dust bin. The over sizes go to an over size bin, then through a coarse crusher, being reduced to about  $\frac{1}{2}$  inch, and the

rolls was put in with the object of adding from 3 to 8 per cent. soft coal to the anthracite dust, in order to make the briquettes remain hard in the fire. Experience, however, has proved that the addition of soft coal is not necessary to make any briquette remain hard in the fire, if the dust is properly treated before and after passing through the press. Both these roll crushers discharge into an elevator which elevates into the mixers.

A general plan of the mixers and a typical section are shown in Figs. 2 and 3. All the drying and heating of the dust are done by direct heat from oil furnaces, which are regulated so that all the heat is absorbed by the dust, the stacks remaining practically cold. After the material is sufficiently heated the pitch or asphaltum is pumped into the tail end of mixer No. 3 by a special rotary pitch pump, which is set to deliver the correct quantity of pitch as determined by the operator. The blades in the mixers are shown in Fig. 3. The shape, pitch and curvature of the blades is slightly different in each mixer, and the speeds vary somewhat, the average being about 175 revolutions per minute. The length and number of mixers is determined by the material to be briquetted, depending on the fineness of the dust, its specific gravity, moisture carried, &c. The mixers used in this plant turn out a perfect mixture irrespective of whether the pitch is atomized or put through a pipe or strainer, unless, as before stated, less than 5 per cent. of pitch is wanted; then the atomizing makes it somewhat easier to make a thorough mixture. This plant, however, has been run for months without atomizing the pitch, and a perfect

\* Consulting engineer, New York City.

mixture is being obtained. The application of atomizing the binder into this form of mixer is patented.

The material is discharged from mixer No. 6 into an elevator which takes it to the press hopper. The press which is shown in Fig. 4 is a rotary machine, having two rolls with pockets in their faces the shape of the briquette. The rolls are geared so that the pockets register and parallel adjusting devices are provided. The hopper is placed directly over the rolls. All bearings are self-

Fig. 6. It will be seen that no waste material passes the rolls, and the shape is such that the briquette will not stick in the molds or pockets. The capacity of the press is 15 tons per hour of the present size of anthracite dust briquettes, and can be increased to 18 tons by running the plant a little faster. This press requires no attention after being started.

From the press the briquettes are conveyed to an automatic baking oven if smokeless briquettes are desired,

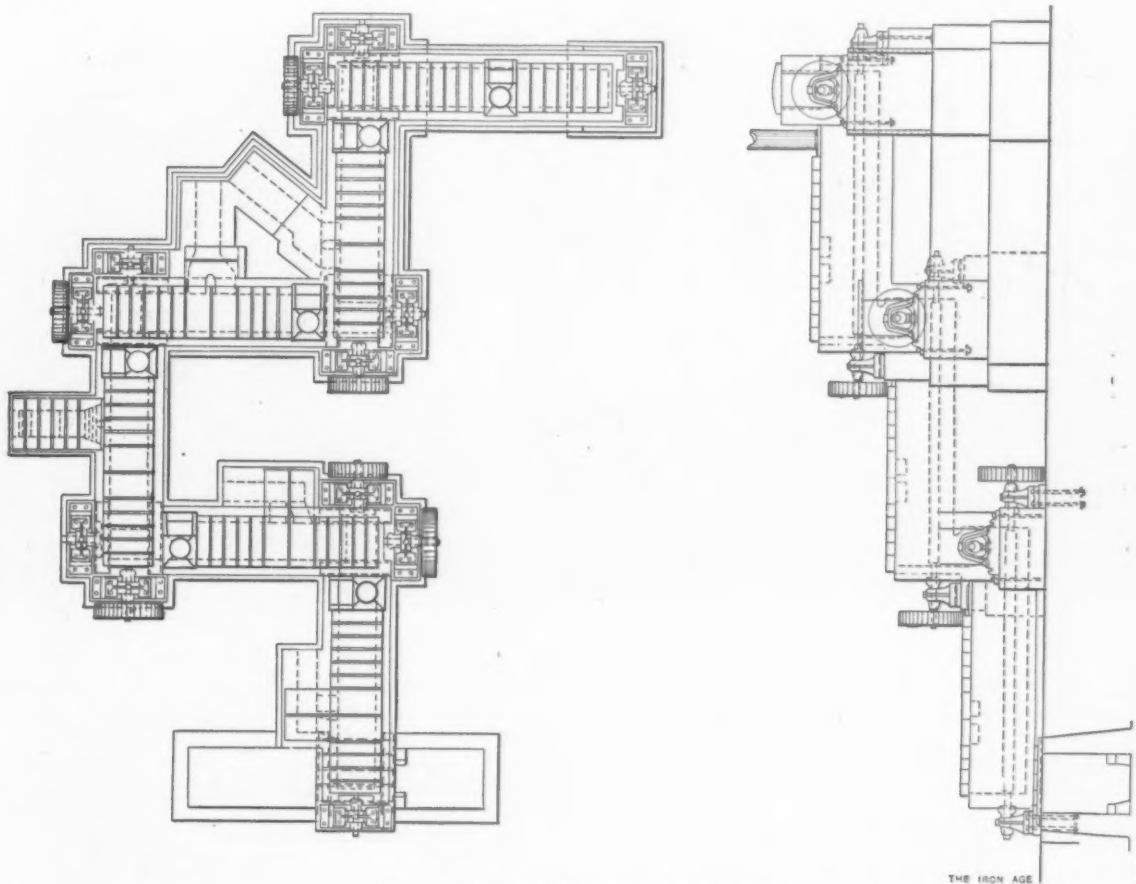


Fig. 2.—Plan and Elevation of the Mixers.

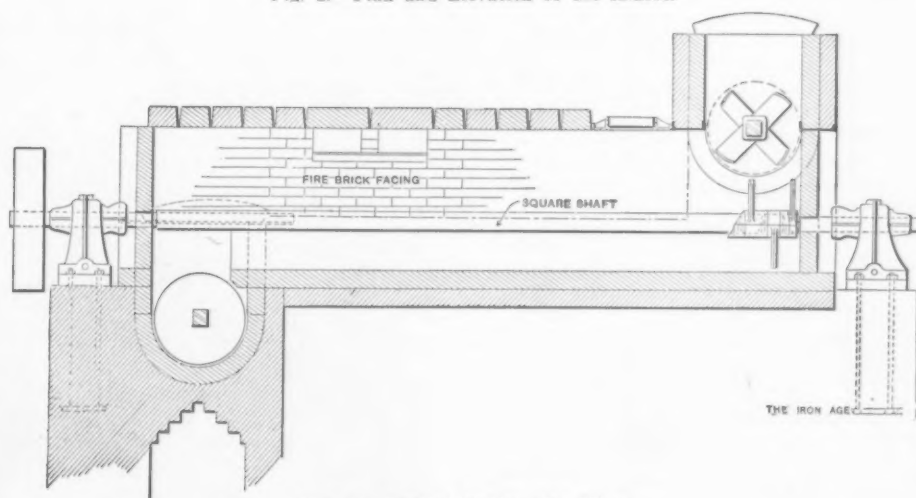


Fig. 3.—Typical Section of a Mixer.

oiling, the oil wells being looked after about once a month.

A section of one of the rolls is shown in Fig. 5. It is made up of disks, the sides of which are machined, then assembled on the shaft and held together by bolts, as shown. A shoulder on the center of the shaft holds the assembled roll in place. The construction of a roll made up of disks as shown, is also patented.

The size of the briquettes is important, and they must be of a size suitable for the purpose they are intended for and the coal they are made of. The same rule that governs the size of natural coal applies to briquettes. A specimen briquette produced by this machine is shown in

and from the oven they are taken by an elevator to the cooling table, after which the product is ready for use. If it is not desired to bake the briquettes they are taken to the cooling table direct and the oven is cut out. Experience has shown there is no objection to unbaked briquettes, even in New York City, as the pitch burns off in a few minutes after they are put on the fire, with a short white flame. Both the oven and the cooling tables are made up of traveling steel plates, a distributor being used on each to spread the briquettes to an even thickness. After passing over the cooling table the briquettes are either elevated or dropped into bins.

The pitch plant consists of a special tank set in brick



work for melting the pitch. This tank has a capacity of 25 tons of pitch. The pitch, brought in barrels, is taken to the second floor on a barrel elevator, where the staves are knocked off and the contents thrown in the tank. After the pitch is melted and heated it is pumped to a reservoir tank ready for use. This tank is similar to the melting tank, and in it the pitch is kept in a heated state

	Cents.
Coal tar pitch.....	44
Labor .....	12
Fuel .....	20½
Lubricating oil.....	01
Running repairs.....	10
Rebriquetting dust from briquettes.....	05
Total.....	92½

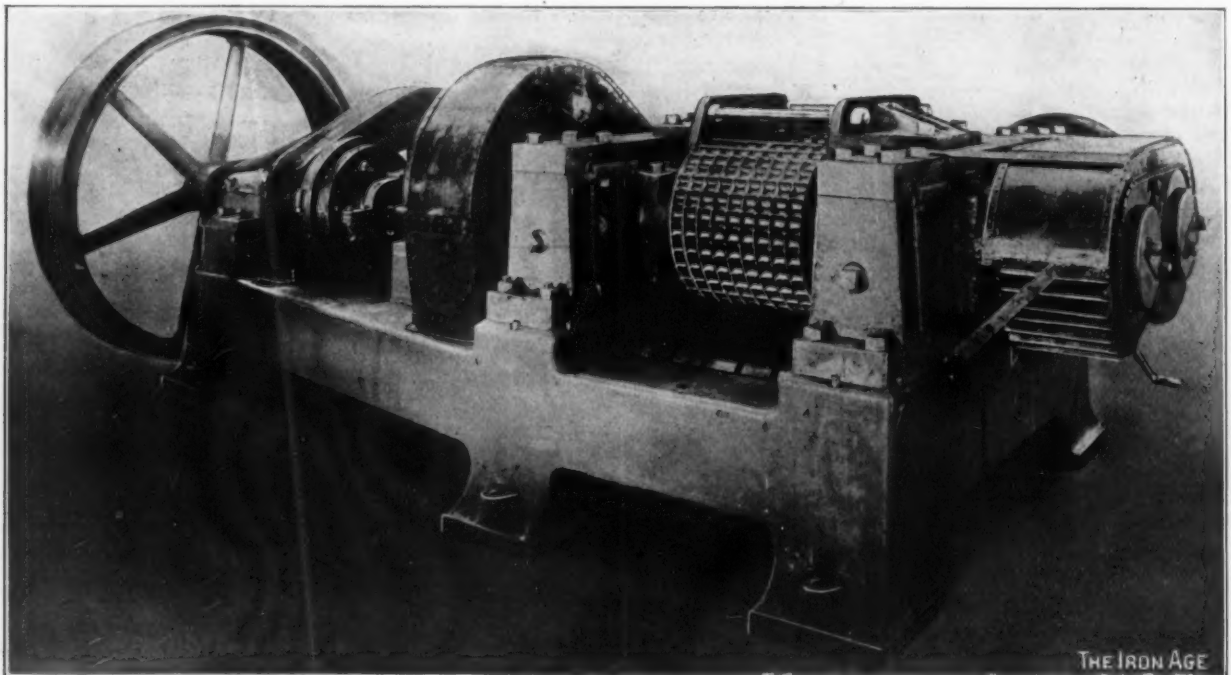


Fig. 4.—The Rotary Press for Forming the Briquettes.

for use. The whole plant is driven by an 18 x 24 inch engine, developing about 140 horse-power at 140 revolutions per minute.

The plant is entirely automatic, no hand labor touch-

Owing to the location the cost of this plant was high, being \$32,000 for machinery and \$35,000 for steel buildings, foundations and erection of machinery, making a total of \$67,000. The average price obtained for the unbaked briquettes in February, 1906, was \$6.60 per ton, delivered—35 cents higher per ton than the best anthracite coal. The total product is readily disposed of. The plant has been in operation since August, 1905.

The advantages possessed by this equipment over plants in Europe are its large capacity per hour, its being entirely automatic, making the labor cost low; and its making briquettes that remain hard in the fire and that can be shovelled and handled like ordinary coal. This plant has been tried on all kinds of coal, lignites and coke breeze from different parts of the country with equal success. Test runs have shown that from 6 to 9

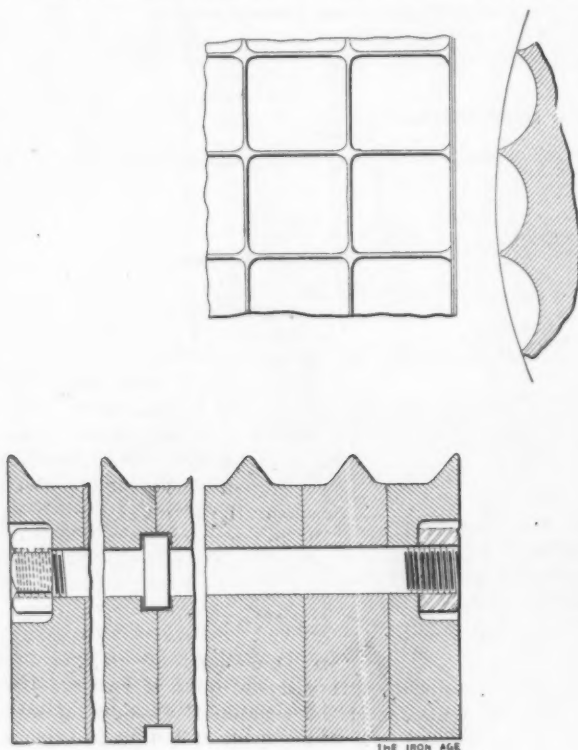


Fig. 5.—Details of One of the Rolls.

ing the material, and has been run whole days by two men. A full complement of men consists of five, a foreman and plant runner, an engineer, an oiler and assistant plant runner, a pitch melter and a dust feed and cooling table attendant. The cost of operating the plant, exclusive of fixed charges and coal dust per 1 ton of ordinary anthracite briquettes, is 92½ cents. This includes:

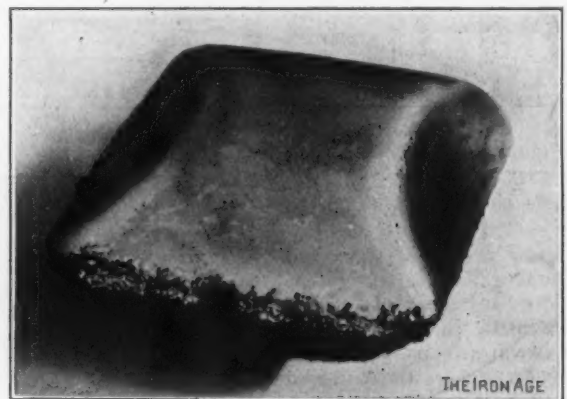


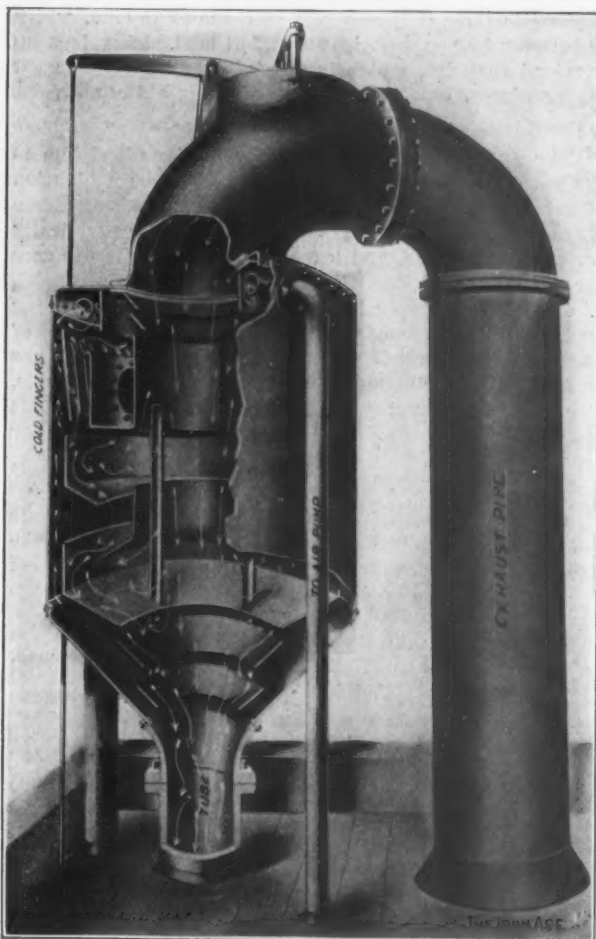
Fig. 6.—A Finished Briquette.

per cent. of pitch is required on the different fuels to make briquettes that will stand transportation and handling, all depending on specific gravity, hardness and fineness of dust. Good anthracite coal dust requires the least, usually 6 to 7 per cent. When only 4 to 5 per cent. of pitch was used it was necessary to use a small quantity of soft coal in order to hold the briquette hard in the fire, but with this small amount of binder they are

not hard enough to stand even the usual wagon handling without a large amount of breakage.

### The Heisler Barometric Condenser.

A condenser having an induced circulation combined with the counter current principle, and claimed to be an innovation in this respect, has lately been designed by the Heisler Mfg. Company, St. Marys, Ohio. It is one well adapted for a central condensing station, being able to maintain a steady vacuum on a variable load, due to its large volume and special provision for clearing itself quickly of any sudden change of air. A simple and efficient arrangement provides for separating and cooling the air taken out by the dry air pump, which has no rubber valve to burn out, as in wet air pumps. It is



The Heisler Induced Circulation Counter Current Condenser.

stated that this condenser cannot clog with sewerage or floating material that may pass through the circulating pump, that it is free of valves and small openings and that complicated automatic devices are not necessary to readjust the condenser when it happens to be suddenly overloaded.

The accompanying engraving shows the condenser partly in section, from which the operation may be readily understood. The exhaust steam enters the condensing chamber centrally from above, and in its rapid downward passage first impinges against the hottest water where the latter enters the air gills directly above the mouth of the barometric or discharge tube. This arrangement embodies the maximum efficiency principle of bringing the hottest steam in contact with the hottest water. The cold condensing water is admitted into an annular circular trough arranged centrally above the series of circular spill trays. Without any attention and regardless of its variation in volume the water is caused to form a cylindrical cataract of large diameter, which exposes an unusually large surface to the steam that is not immediately condensed in the mouth of the barometric tube.

Intervening between the cylindrical cataract and the outer walls of the large condensing chamber is a large annular passage, which permits a gradual and slow upward flow of uncondensable vapors and air. These precipitate moisture as they slowly rise and come in contact with the colder water and finally with a belt of cooling fingers or baffle plates arranged around the annular cold water spill trough. Here the air is reduced to the lowest possible temperature and is thoroughly dried by the cold baffle plates, which collect the remnant of moisture not precipitated in the upward flow. As the air rises above the cold fingers or baffle plates it is collected by a dry pipe or trap and is carried cold and free of moisture through a pipe to a dry vacuum pipe.

Arranged directly under the exhaust inlet is a nest of circulating gills, which causes a continual circulation of vapor currents through the chamber and materially increases the condensing capacity, somewhat as in a cooling tower. The air gills arranged at the mouth of the discharge tube assist in discharging the air from the condensing chamber, and thus reduce the work of the dry vacuum pump and improve the vacuum in the condenser.

The barometric condensers are constructed of heavy boiler plate steel, riveted and calked inside and outside, and are tested for air tightness. A heavy base casting is fitted at the bottom of the barometric tube. Usually it is not necessary to provide a supporting tower when the condenser can be located near or in the same building. All condensers are fitted with exhaust relief valves, which are designed to meet the requirements of each case.

Much success has been obtained by the use of a centrally located barometric type of condenser in large plants having the exhaust from several engines leading into it through a central exhaust main. This type commends itself to service where great fluctuations frequently occur in the amount of power developed by any engine in the system, as the vacuum under such conditions remains practically constant, and the drop in vacuum due to the pipe friction with airtight connections has been found too small to be seriously considered on average distances. The centrally located condensing system reduces the number of auxiliaries, because it is not necessary, as with a jet or surface condenser, to locate it near the engine. This reduces the cost of attendance and repairs, and there is a tendency to more economical and reliable operation. The auxiliaries may be located wherever most convenient for water supply or attendance.

**American Gas Producers in Europe.**—As indicative of the progress of American gas producer work in Europe it is interesting to note that Ehrhardt & Sehmer, Schleifmuehle, Germany, European manufacturers of the Morgan continuous gas producer, one of the specialties of the Morgan Construction Company, Worcester, Mass., have received from a steel works in Bochum, Germany, an order for 12 10-foot producers after a sharp competitive test against the Poetter producer. They have also an order from the Société Gobain, Pisa, for six feeding mechanisms and an order from the Milowice Iron Works, Russian Poland, for three 10-foot producers, which they think is an entering wedge to considerable business in Russia.

Monophase current is to be used on an interurban road connecting Vienna with the town of Baden. There is a double track over the distance of 17 miles. Current is to be supplied by a single phase system using 500 volts at the motors. Each car has two series motors of 36 kw. each, arranged for operation with either direct or alternating current and coupled either in series or in parallel. There will be two 200-kw. alternators delivering current at 10,000 volts and a 165-kw. direct current generator operating at 500 volts. Each of the two rotary converter groups is composed of a monophase synchronous motor of 150 kw. at 10,000 volts and a 100-kw. 500-volt direct current generator. Express trains are to run at 30 miles an hour; local trains slower.



## Power Plant Efficiencies.

In a paper entitled "Power Plant Economics," presented by Henry G. Stott, superintendent of motive power of the Interborough Rapid Transit Company, New York, before the American Institute of Electrical Engineers, an interesting comparison was made of the total efficiencies of five types of power plants, all based on the most modern practice, one consisting entirely of reciprocating engines, another entirely of steam turbines, another a combination of the two, a fourth consisting of gas engines and finally one a combination of gas engines and steam turbines.

### Reciprocating Engines.

The following table gives a complete analysis of what is probably one of the most efficient reciprocating engine plants in existence, and may be taken as typical:

*Analysis of the Average Losses in the Conversion Through Steam of 1 Pound of Coal Into Electricity.*

B. T. U. per pound of coal supplied.	B. T. U.	%	B. T. U.	%
Loss in ashes.....	14,150	100.0	...	...
Loss to stack.....	...	...	340	2.4
Loss in boiler radiation and leakage .....	...	...	3,212	22.7
Returned by feed water heater.....	441	3.1	1,131	8.0
Returned by economizer.....	960	6.8	...	...
Loss in pipe radiation.....	...	...	28	0.2
Delivered to circulating pump.....	...	...	223	1.6
Delivered to feed pump.....	...	...	203	1.4
Loss in leakage and high pressure drips .....	...	...	152	1.1
Delivered to small auxiliaries.....	...	...	51	0.4
Heating .....	...	...	31	0.2
Loss in engine friction.....	...	...	111	0.8
Electrical losses.....	...	...	36	0.3
Engine radiation losses.....	...	...	28	0.2
Rejected to condenser.....	...	...	8,524	60.1
To house auxiliaries.....	...	...	29	0.2
Totals.....	15,551	109.9	14,099	99.6
Losses deducted.....	14,099	99.6	...	...
Delivered to bus bar.....	1,452	10.3	...	...

Commenting on the data, the author's opinions were that the loss in ashes could not be reduced, but that the loss in the stack could and should be reduced to 12.7 per cent. or even 10 per cent., by careful firing of the furnaces. The loss in boiler radiation and leakage might be slightly decreased by preventing the infiltration of air in the boiler setting. The loss in pipe radiation is practically a minimum, as is also that in the heat delivered to circulating and boiler feed pumps, and the loss in leakage and high pressure drips. The loss in engine friction depends upon the efficacy of the lubricating provisions, and the electrical losses and engine radiation losses are practically negligible. The heat rejected to the condenser is unavoidable, but by the use of superheated steam it should be possible to effect an improvement. The author believes that the present type of power plant using reciprocating engines can be improved in efficiency by reducing the stack losses 12 per cent., boiler radiation and leakage 5 per cent., and the engine losses, by the use of superheat, 6 per cent., resulting in a net increase in thermal efficiency of the entire plant of 4.14 per cent., bringing up the total thermal efficiency to 14.44 per cent.

### Steam Turbines.

With dry saturated steam there appears to be no advantage in a steam turbine over a reciprocating engine, but with a superheat of, say 200 degrees, there would be a net thermal saving of 6.6 per cent. The all-day efficiency of the turbo unit would be considerably better than that of the reciprocating engine, while at the same time its cost is approximately one-third less than that of the engine, figuring in the cost of the generators in both cases.

The author gives calculations to show that a combination of a high pressure reciprocating engine with a low pressure turbine on its exhaust would place each where it is most efficient and result in better economy than could be obtained from either alone. His figures allowed the reciprocating engine 50 per cent. more steam because it would operate noncondensing, and the turbine a reduction of efficiency to 70 per cent. on account of the wetness of the steam it would receive.

### Gas Engines.

It is interesting to compare the efficiency of a typical gas plant with a steam plant. The following table gives a heat balance believed to represent the best results obtained in Europe and the United States up to date, in the formation and utilization of producer gas:

*Analysis of the Average Losses in the Conversion Through Gas of 1 Pound of Coal Into Electricity.*

	B. T. U.	Per cent.
Loss in gas producer and auxiliaries.....	2,500	20.0
Loss in cooling water in jackets.....	2,375	19.0
Loss in exhaust gases.....	3,750	30.0
Loss in engine friction.....	813	6.5
Loss in electric generator.....	62	0.5
Total losses.....	9,500	76.0
Converted into electrical energy.....	3,000	24.0
Totals.....	12,500	100.0

A first-class plant of either type represents an approximately equal investment. The great objection to gas engines is their limited range of economical load, which is between 50 per cent. load and full load. They lack an overload capacity, which is absolutely essential to most power plants, especially those supplying railroads.

### Combination of Gas Engines and Steam Turbines. :

The author's experience and observations lead him to suggest as an ideal plant one consisting of a combination of gas engines and steam turbines, an equal power capacity in each, allowing the gas engines to operate practically under constant load, and leave the steam turbines to care for all the fluctuations. This they are eminently capable of doing, as they may be overloaded as much as 100 per cent. for a few seconds, and the normal fluctuations of any plant will probably not average more than 25 per cent., with a maximum of 50 per cent. for a few seconds. The author calculates that such a combination plant would have an average total thermal efficiency of 24.5 per cent.

### Relative Economy of Five Types of Prime Movers.

His comparison of the relative cost of maintenance and operation and relative investment per cent. for the five types of power plants is interesting, being as follows:

*Comparison of Five Types of Power Plants.*

	Maintenance and operation.	Investment.
Reciprocating engines.....	100.00	100.00
Steam turbines.....	79.64	82.50
Reciprocating engines and steam turbines..	75.72	77.00
Gas engine plant.....	50.67	100.00
Gas engines and steam turbines.....	46.32	91.20

These values have been estimated wherever possible from actual data derived from various sources, both domestic and foreign, and reduced so as to make them comparable with one another.

**The Cement Industry in 1905.**—A preliminary statement on the production of hydraulic cement in the United States during the calendar year 1905 has been issued by the United States Geological Survey. It shows that the total production of all kinds of hydraulic cement in 1905, including Portland, natural rock and slag or Puzzolan cements, was 40,894,308 barrels, valued at \$36,012,189. This was an increase of 9,219,051 barrels, valued at \$9,980,269, over the production of the previous year. Of the total amount of cement manufactured in the United States in 1905, 36,038,812 barrels were Portland cement, with a value of \$33,326,523; 4,473,049 barrels were natural rock cement, valued at \$2,413,052, and 382,447 barrels were slag or Puzzolan cement, valued at \$272,614.

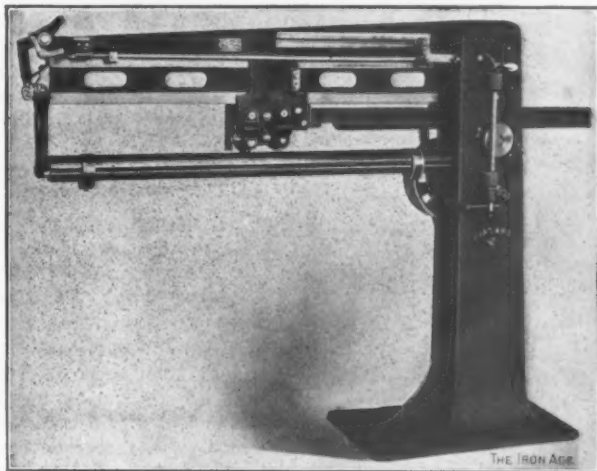
**The Republic Iron & Steel Company.**—The Bessemer plant of the Republic Iron & Steel Company made a record in March in the production of over 47,000 tons of ingots. A permanent increase in the output of this plant is assured by the arrangements for bringing hot metal from the Hazleton furnaces, the new one of which will be completed in the next two or three months. At the Pioneer furnace plant of the company at Thomas, Ala., the stack, which has been under reconstruction since last fall, will be blown in in the near future, and for a time will probably make basic iron for the Ensley steel plant of the Tennessee Coal, Iron & Railroad Company.



### The Niagara Heavy Power Groover.

The machine illustrated is intended for grooving and flattening the longitudinal seams of sheet metal cylinders made of iron or soft sheet steel up to No. 20 gauge, 36 inches long, and is built by the Niagara Machine & Tool Works, Buffalo, N. Y. The traveling carriage, which is actuated by rack and pinion, carries two rolls, one of them for grooving the seam on the way forward, and the other for flattening it on the return trip. The grooving horn is  $3\frac{3}{4}$  inches in diameter, and may be rotated so that either a flat surface, or one of the grooves that are planed in the horn can be turned upward. When the seam is to be toward the outside of the work a roll with groove of the proper width is used on the carriage, and for inside seaming a flat roll presses the seam into one of the grooves of the horn.

The grooving and flattening rolls can be adjusted independently by means of eccentrics to suit the thick-



The Niagara Heavy Power Groover.

ness of material and the desired tightness of the seam. A stop is provided at the outer end to prevent the work from slipping off the horn while being grooved. This stop is adjustable for work of various lengths. A guide is attached to the travelling carriage to hold the lock in position laterally. The operator can stop the motion of the traveling carriage during the forward movement at any point by means of a hand wheel. Rolls with grooves 5-16, 7-16 and 9-16 inch wide, and two flattening rolls are usually furnished. The weight of the machine is about 1250 pounds.

### The Cold Drawn Screw Rod Duty.

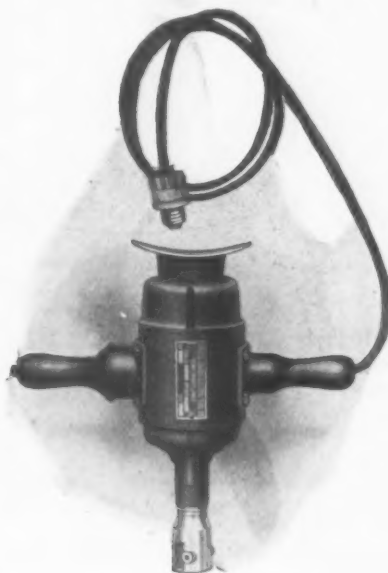
A decision of interest affecting the customs classification of cold drawn screw rods was made by the Board of United States General Appraisers April 14, when a claim filed by George Nash & Co., New York, was overruled on the ground that the protestants had failed to make the correct claim. The merchandise in one of the cases protested was returned by the appraising officer as steel bars, value above 22-10 cents and not above 3 cents per pound, and duty was assessed thereon at the rate of 9-10 cent per pound, under the provisions of paragraph 135 of the tariff act; in the other protests it was returned as cold rolled and brightened screw rods, and duty was assessed at 4-10 cent, plus  $\frac{1}{2}$  cent per pound, under paragraph 136. All the merchandise is claimed to be dutiable properly at only 4-10 cent per pound, under the latter named paragraph.

At the hearing the witness for the importers testified that the goods are iron screw rods, which are hot rolled and then cold drawn, but subject to no other treatment whatever, and he identified a sample which was sent up from the local appraiser's office at the time of the hearing as a representative sample of the goods. On this testimony, which was not contradicted, the Board holds that the rods are not subject to the additional duty of

$\frac{1}{2}$  cent per pound, under paragraph 136. General Appraiser Fischer, who writes the decision, says it is clear that the rods, being concededly cold drawn, fall within the terms of the sweeping provision contained in the opening clause of paragraph 141 of the tariff act, which provides that cold rolled or cold drawn rods shall pay an additional duty of  $\frac{1}{4}$  cent per pound. The board therefore holds that the rods are primarily dutiable, under paragraph 136, according to value, and at  $\frac{1}{4}$  cent per pound in addition, under paragraph 141. As this claim was not made in the protests, the board overrules the contentions without affirming the correctness of the collector's assessment. It would not be surprising should another case be brought by an importer taking advantage of the opinion expressed by the board or, on the other hand, the Treasury Department may voluntarily adopt the classification suggested by the tribunal.

### The U. S. Single Speed Electric Drill.

Besides building a line of variable speed drills, the United States Electrical Tool Company, Cincinnati, Ohio, has recently put on the market a complete line of single speed drills, an illustration of one of which is shown in the accompanying engraving. These tools are comparatively light in weight and are much smaller for a given size as well as more powerful and efficient than the variable speed drills. The drill is easy to operate, being provided with two handles opposite each other, through one of which the current is introduced, while the other contains a push button switch. The tool will be fur-



A Single Speed Electric Drill Made by the United States Electrical Tool Company, Cincinnati, Ohio.

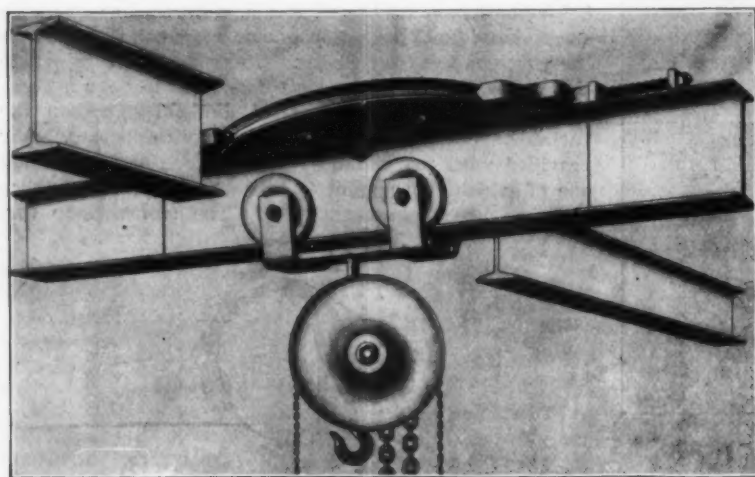
nished with either a wooden spade handle or with a nickle alloy breastplate so arranged that it may be set at any angle the operator may choose. The armature shaft is provided with a fan which constantly draws a current of air through the motor, exhausting at the front end, thus cooling both the armature and the drill. This is an important feature in both the single and variable speed drills made by this company.

The Antismoke League recently formed in New York City is not designed, its promoters say, to prevent the burning of soft coal, but to insist on proper firing and to abolish smoke as far as possible. One firm affiliated with the league says that formerly it was able to manufacture in New York City the most delicate silk fabrics, with a very small percentage of damaged goods. For the last three years, and particularly for the last two years, it has become almost impossible to manufacture delicate shades, on account of the impregnation of the air with soft coal smoke.

### The New Jersey Overhead Trolley and Turntable.

As useful parts in an overhead tracking system the New Jersey Foundry & Machine Company, 9 Murray street, New York City, manufactures the patented roller bearing trolley and ball bearing turntable illustrated. The trolley is made of steel, with cast iron sheaves equipped with roller bearings. The brackets carrying the trolley wheels are pivoted so as to allow a free motion of the trolley going around curves. All wearing surfaces are large.

The turntable consists of a circular grooved steel piece bolted rigidly to the overhead supports. A short piece of track, to which are bolted two sliding pieces holding the balls in the grooved piece, constitutes the turning part. Locks are arranged on the ends of each track leading to the turning piece to hold them in alignment with the turntable at each of its positions. The head room required for this turntable is but 2 inches and it makes a very convenient transfer device for places



A Roller Bearing Turntable Manufactured by the New Jersey Foundry & Machine Company.

where switches could not be used to advantage. The company manufactures a complete line of overhead carrying apparatus, adapted for use under almost any circumstances for loads up to 12,000 pounds.

In estimating the weight of an iron casting from that of its pattern common practice has been to count 1 pound for each ounce of the pattern and add 10 per cent. This is fairly accurate, but only when the pattern is wholly of wood. With ornamental castings, where much of the pattern is of composition or occasionally even of lead, this method gives poor results. A stove manufacturer in Cleveland, wishing to improve the accuracy of such a forecast, constructed a tank 24 x 36 inches, 12 inches deep and graduated the upper 3 inches into sixty-fourths of an inch. When the tank had been leveled up and filled with water to the lower lines of the scale the additional displacement registered by the immersed pattern formed a very accurate measure of its volume, and the weight of the casting was found by multiplying the number of sixty-fourths by four.

Centrifugal pump tests are being made on a large scale in the new hydraulic laboratory of the University of Wisconsin. A specially designed 1,000,000-gallon pump, so fitted that a wide range of impellers may be used in it, has been built for this work and will be run at various rates of speed up to 3000 revolutions per minute or more. Extensive experiments will also be made on full-sized apparatus to determine the effect of gates, submerged orifices and screen racks on the flow through intakes and similar waterways. Patented apparatus offered will also be tested. The new laboratory, 48 x 96 feet, with two stories and basement, is very favorably located for carrying on experiments on a large scale.

### The Tennessee Coal, Iron & Railroad Company.

Within the past week the Tennessee Coal, Iron & Railroad Company has fixed the price of its open hearth rails for 1907 delivery at \$29, and has already booked orders that will take up its capacity for the first half of next year. Inquiries for open hearth rails have come from several roads that have not heretofore bought them.

It would appear that no steps are contemplated in the immediate future looking to a closer union of the Republic Iron & Steel Company and the Tennessee Coal, Iron & Railroad Company through the medium of a holding company. As is well known, the principal members of the syndicate which acquired the Tennessee Company are in control of the Republic Company, but the boards of directors are not identical and will not be, the stock of the Republic Iron & Steel Company being widely held. President John A. Topping of the Republic Company was elected chairman of the Tennessee Company at the recent meeting of the directors at Birmingham, on the resignation of Chairman Don H. Bacon, but a president is yet to be elected. It is expected that the choice will be made at the meeting of the directors following the annual meeting of the company on May 1. The president will probably be a man of experience on the operating side of iron and steel manufacture. Chairman Topping has designated as his assistants T. J. Bray and T. W. Guthrie, who are also his assistants as president of the Republic Iron & Steel Company. The Executive Committee of the Tennessee Coal, Iron & Railroad Company is expected to be reduced from seven to five members at the time of the annual meeting, and Chairman Topping will take the place of Mr. Bacon on that committee. Grant B. Schley, L. C. Hanna, John W. Gates and E. W. Oglebay, with Mr. Topping, will then constitute the Executive Committee, making it identical with the Executive Committee of the Republic Company.

Of the \$3,500,000 of new stock of the Tennessee Company voted to be issued out of the \$7,300,000 additional authorized some time ago the first payment of \$875,000 was made this week. The remaining payments will follow at intervals of three months.

With the increasing prominence that will be given to steel production by the Tennessee Company from this time on, it is not at all likely that the plans for the building of a cast iron pipe plant will be carried out. These have been under consideration in the past year and the former management had decided, on the basis of the report of an expert who made investigations in Europe, to go ahead with the pipe works project. Since the steel works have now not enough pig iron, and there is no disposition on the part of the company to reduce the volume of its foundry iron trade, there is no blast furnace capacity available for supplying iron to a pipe works.

Unification of equipment in the power house, which requires but two kinds of current to be generated—direct current for excitation and alternating current for the output—is the goal toward which far-sighted engineers are working. There will still be important installations for the generation of direct current, since this is required for certain chemical processes, but it is believed that with the advent of a practicable car motor operated by alternating current conditions have so adjusted themselves that the simple requirements above outlined will, except in special cases, suffice. The main advantages in the simplification are: Reduction in the number of spare parts required, ready interchangeability of parts, in some cases a possible decrease in the total rated capacity of the plant, due to the use of machines of considerable size and high efficiency, and the elimination of superfluous apparatus.



### The New Doty Double End Punch and Shear.

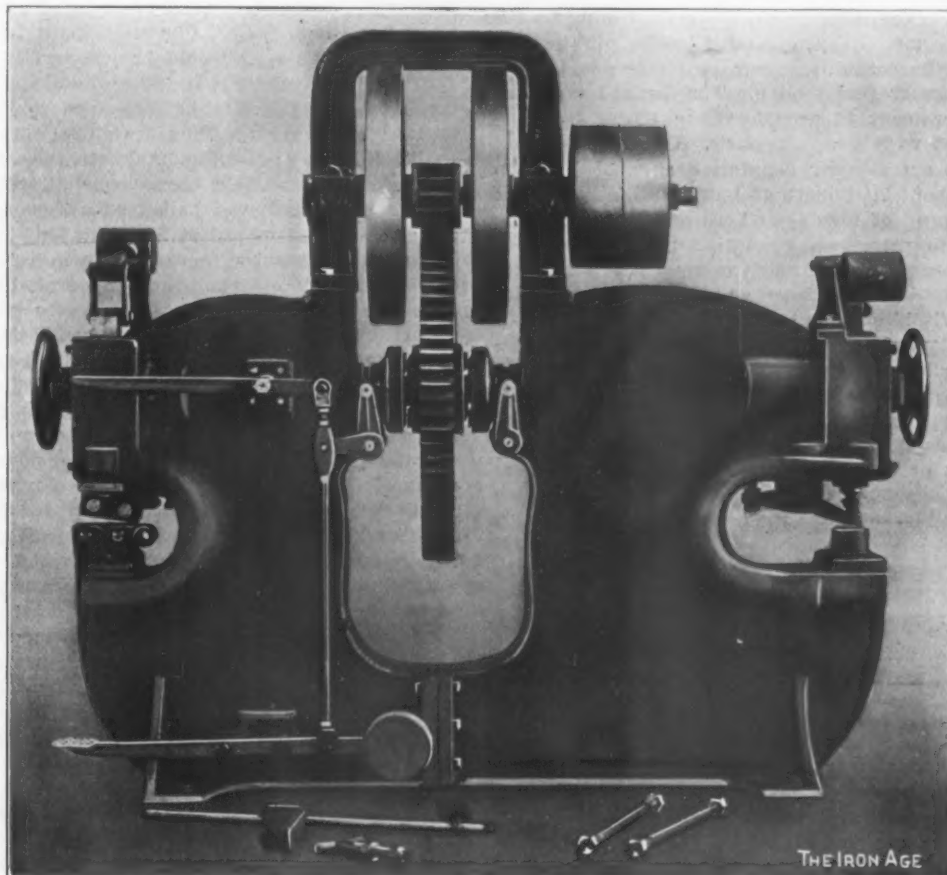
Heavy and substantial construction characterizes the large double end punch and shear recently built by the New Doty Mfg. Company, Janesville, Wis., and shown in the accompanying illustration. The machine is self contained, well proportioned and powerful. The eccentric shafts are of hammered wrought iron or steel, as may be specified, and the driving shafts are so placed as to permit their removal without disturbing the gearing. The sliding heads are counterbalanced and on the heavier machines the weight is connected through a heavy spiral spring, which takes the shock and prevents the breakage of the counterbalanced parts.

The machine can be supplied with an automatic stop which brings the sliding head to rest at any desired point of the stroke. In the illustration the machine is shown equipped with punching tools on one end and cross cut knives for flat bar work on the other end. It

is one consisting of a bundle of spikes. With this a sphere of some yards in diameter can be cleared in a few seconds.

### Iron and Steel in Spain in 1905.

The mineral statistics of Spain for 1905 show that a record was made in iron ore production, the total being 9,395,314 metric tons, compared with 7,964,748 tons in 1904. The Vizcayan production was more than 50 per cent. of the total, being 5,080,000 tons, against 4,554,951 tons in 1904. The Vizcayan shipments to other countries were almost entirely through Bilbao, the total from which was 4,240,144 tons last year, against 3,787,899 tons in 1904. The production of Rubio ore last year by the two principal Bilbao producers was 708,183 tons by the Sociedad Orconera and 280,057 tons by the Sociedad Franco-Belga. Of the ore exports of 1905 Great Britain took nearly 70 per cent., or 5,845,895 tons, the total being



A Double End Punch and Shear Recently Built by the New Doty Mfg. Company, Janesville, Wis.

can be equipped with knives for cutting plates and angles or any other tools that can be used on a punch or shear. The company furnishes these machines with punches and dies for cutting out manholes, hand holes, flue holes of all sizes, &c. The extension die seat and punch holder bring the center of the die out to the front of the machine so that flanges and angles can be punched, and this construction also makes it convenient for punching rivet and stay bolt holes in the center of wide plates.

The company is prepared to furnish all sizes and all different depths of throat, and can combine a short throat for the shear and a deep throat for the punch, or *vice versa*. The different punching and shearing attachments are interchangeable with a single machine of the same size.

For dissipating fogs by electric discharges it has been found that a fog containing dust or smoke is more easily precipitated than one consisting only of water. It is supposed that the solid particles are the more easily charged by a radiator and are then propelled away from it, precipitating any particles of vapor with which they may collide. It was found that the best type of radiator

8,590,482 tons. Holland took 1,806,328 tons, Belgium 314,203 tons, France 251,716 tons, the United States 213,203 tons (35,785 tons in 1904), Germany 140,471 tons and other countries 18,666 tons. Great Britain took 1,137,232 tons more of Spanish ores in 1905 than in 1904, the increase being 24 per cent.

The output of pig iron in Spain in 1905 was 383,100 tons, against 386,000 tons in 1904. Eighteen works produced pig iron, the chief of which is the Sociedad Altos Hornos de Vizcaya, its product being 209,000 tons, or about 55 per cent.

The output of Bessemer steel in 1905 was 113,664 tons, as against 93,100 tons in 1904. Bessemer steel is produced only by the Altos Hornos Works and a small steel foundry. The output of open hearth steel was 124,200 tons, as against 100,659 tons in 1904. The Altos Hornos Company produced 55,000 tons last year and its output of Bessemer and open hearth steel was 168,500 tons, out of a total output for the country of 238,000 tons. This last represents a 20 per cent. increase over 1904. The output of puddled iron in 1905, was 52,250 tons, against 53,177 tons in 1904. The output of steel in Spain has more than doubled since 1898, when the total of Bessemer and open hearth was 112,000 tons.

## Niagara and Ontario Power Users.

### A Power Deputation.

TORONTO, April 14, 1906.—From a state of comparative sluggishness public interest in Niagara power has suddenly burst into enthusiasm. It is but a few years since a land company owning property in the neighborhood of Niagara power works found it impossible to attract industries to that center by the offer of free sites and electric energy at the rate of \$15 per 24-hour horse-power per annum. At that time the two power companies now sending current from the Ontario bank of the Niagara into New York State could not obtain contracts for any large blocks of their output in the Province, whether at the Falls or at points on their proposed transmission lines. Possibly the prices quoted did not show a sufficient advantage to power users to induce them to discard their steam plants and install electric outfits. At all events, there was no outburst of welcome to the new power developments. Now, however, feeling on the matter has become impetuous, and it looks as if the politicians would be consulting their own interests if they hastened to humor that feeling. The demand upon the Ontario Government to provide cheap power has just been expressed with some emphasis. On Tuesday what is described as a monster deputation assembled in Toronto from about 70 important municipalities—most of them of the rank of towns—and waited on the Ontario Government to present a resolution urging legislation enabling the Governor in Council to appoint a permanent provincial commission, with power to take, where considered by it advisable, action on the construction, purchase or expropriation of works for the generation, transmission and distribution of electric power, heat or light; to arrange with any existing development company for the acquisition or purchase of power at a reasonable price, so as to be transmitted and sold by the Government to municipalities or others; also to vest in it the powers necessary to enable it to regulate the price at which electricity shall be sold. To the petition embodied in this resolution and supported by the spokesmen of the 1500 delegates Premier Whitney replied in effect that he would meet their wishes, though he declined to say by what particular course he would proceed to procure them cheap power.

### The Municipalities' Power Commission.

The visit of the deputation was a sequel, if not a direct consequence, of the report of what is known as the Municipalities' Power Commission. Just one week earlier its report had been made public, and its positive statements as to the very low cost at which electricity from Niagara could be produced and delivered gave sharp excitement to the desire for cheap power. It is unnecessary to go further into the elaborate figures of this report than to adduce one or two of the most important. It stated that with a 100,000 horse-power development electricity could be produced at the Falls at not more than \$8 per horse-power. As indicating the cost of transmission, \$17 per horse-power, delivered in Toronto, will serve as well as any other of the numerous exact calculations made. The report was prepared with manifest care; the expert member of the commission being an American engineer and the consulting engineers men of high professional standing in Canada. One of the members of the commission, Adam Beck, is also a member of the Ontario Cabinet. Moreover, the investigation was no hurried one. The commission spent two years on the work. All these considerations gave weight to the commission's statements and recommendations. It is not surprising that immediate vent was given to the cheap power sentiment of the Province after this report was made public. A further influence to bring this sentiment to a head was the missionary work of Mr. Beck. Both before and after the report appeared he addressed public meetings on the subject of cheap power, and by his earnestness and positiveness he wrought feeling and expectation on the question to a high pitch. For, as has already been said, he was a member of the Government, as well as a member of the Municipalities' Power Commission. Not only so, but he was also chairman of the Royal Commission on

Hydro-Electric Power, appointed by the Ontario Government last July. Naturally public opinion at the present time could not but be responsive to the report of the Municipalities' Power Commission and to the Minister who is known as the power statesman. The deputation came as a matter of course after this somewhat exciting preparation of public opinion.

The seven municipalities represented in the Municipalities' Power Commission are Toronto, Guelph, Brantford, Stratford, Ingersoll, London and Woodstock.

### The Hydro-Electric Commission.

Highly satisfactory though the report of the Municipalities Commission was, more than bearing out the popular estimates as to the low cost of power, it still left one formidable obstacle in the way. This was the large capital outlay required. For a 100,000 horse-power development \$12,000,000 would have to be expended, and the assessment of each of the seven towns' share in this total amount would in most cases involve a debt charge beyond the limit allowed to a municipality. Of course, the contribution of each would be lessened if the commission's suggestion that 11 other municipalities on the trunk transmission line be persuaded to join municipal partnership. Further, there were numerous other municipalities in the region tributary to the Niagara River that were left outside the scheme altogether. Hence, though the report was hailed as a demonstration that power could be supplied at less than half the rate asked by private companies there was an indisposition to undertake the development and transmission of power. Added to this indisposition there was a general conviction that the Whitney Government would be more friendly to the idea of a provincial plant than the Ross Government was. A reason for this greater confidence in the Whitney Government was the Premier's repeated declaration, both before and after coming into office, that it was the duty of government to see that power consumers obtained electricity from Niagara at a reasonable price. As an earnest that he meant to stand by this statement of policy Mr. Whitney last July appointed the Royal Commission on Hydro-Electric Power, to which was referred the task of studying the economy of power production at waterfalls and rapids under the Provincial Government's jurisdiction. The first part of this commission's report was presented the day that deputation waited on the Government. This report relates to power within the Niagara district, a region defined as that part of Ontario including Toronto westward to Lake St. Clair and south of the latitude of Toronto. Thirty-nine municipalities were included in this study. As Adam Beck was chairman of this commission, in addition to being a member of the Municipalities' Commission, the public was probably enabled to anticipate from his speeches the general nature of the Hydro-Electric Commission's report. However that may be, the deputation met the Government an hour or so before this report was made public. That report is a most important document. It covers the question very thoroughly, and shows the maximum requirements to be 109,408 horse-power at full load.

For the supplying of this power it is suggested that the Government make a contract with existing generating companies at a price at the high tension bus bars at Niagara. The commission's chief engineer had found it difficult to make an exact calculation of the cost of generating power for the reasons: 1, That works are still in process of completion at Niagara; and, 2, that the companies refused to give information. Twelve dollars per 24-hour horse-power per annum is named as a fair price, as, according to the engineer, large blocks have been sold at that price at the high tension bus bars.

Should it be found desirable for the province to establish a generating plant of its own the engineer recommends a location in the park farther from the Falls than any of the plants now there. This would necessitate the building of a 5000-foot tunnel, and he gives an analysis of the capital cost, which for 100,000 horse-power totals \$8,631,168.

The yearly operating charges of such a generating plant are estimated at \$811,100.

The total amount saved to power consumers in To-



ronto by the substitution of Niagara electricity, developed and transmitted by the province, is estimated at \$684,000 per annum.

#### International Waterways Commission.

The report which the Canadian members of the International Waterways Commission made to the Dominion Government has led the latter to take an interest in Niagara power. Both Sir Wilfrid Laurier and Mr. Hyman, the Minister of Public Works, made statements in the House about a fortnight ago to the effect that Canadian interests in Niagara River would be safeguarded. The Dominion, having jurisdiction in matters of trade, can say whether electricity from the Canadian side of Niagara shall or shall not be exported to the United States. The Canadian Niagara Power Company is making application this session to have its Ontario charter adopted as an enactment of the Dominion Parliament. The effect of such adoption would be to give the company a right to export its power, a privilege now exercised by it as a matter of sufferance and not under any positive authority from the Dominion Government. The two ministers already referred to stated in connection with this proposed legislation that it would be the Government's policy to make any grants of authority to export electricity subject to cancellation on short notice, as the aim would be to keep at all times in readiness enough to supply increasing demands on the part of Canadian power consumers. Should the Ontario Government establish a 100,000 horse-power development plant and transmission system, as recommended by the Hydro-Electric Power Commission, there will be no other outlet for the power generated by existing companies than the market in New York State. An Ontario Government plant would cut these companies off the market in their own province, and a Dominion Government export duty would cut them off their present market in New York State. It is probable that neither Government will take such extremely adverse action against existing companies. That the Ontario Government will do something to cheapen Niagara power for consumers Mr. Whitney has positively stated. He will be very likely to succeed in making contracts with the companies at a price not far above \$12 at the high tension bus bars of their generating plants. If so, he will probably take over the transmission lines of the Electrical Development Company of Ontario. A 100,000 horse-power distribution will satisfy the wants of the towns and cities ambitious to become great manufacturing centers and leave enough for export from existing plants.

A process for case hardening iron has been developed by two German inventors. It consists in adding to the iron a small percentage of phosphorus combined with a considerable amount of carbon, and the treatment is thus described: The iron is heated in a tempering powder of bone dust, to which are added 300 grains of yellow prussiate of potash, 250 grains of cyanide of potassium and 400 grains of phosphorus. The receptacle in which the iron and these ingredients are placed is closed and after the cracks are luted is raised to a clear red or white heat. The material treated is then taken out and plunged while still hot into a warm bath. It is claimed that a piece of iron weighing 400 pounds can be hardened to a depth of .04 inches and that the iron so hardened can neither be cut nor chipped by the best steel, although it can be readily welded.

If designed with proper proportions of heating and grate surface, experience shows that any of the standard types of boilers, whether water tube, horizontal return tubular or internally fired, give, when clean and in good condition, about the same evaporation per pound of coal. Externally fired boilers have some advantage in combustion, on account of the heat retained by the brick furnace, but they are subject to serious losses by air leakage and radiation, the average waste being about 8½ per cent. Repairs and upkeep are here a considerable item, while with internally fired boilers the efficiency of the furnace is maintained practically constant through long periods of service. Tests have shown that brick fur-

naces will continue to absorb heat for a period of as much as 72 hours after the fires are started, while, as a result of the somewhat rapid deterioration, more or less air leakage through the brickwork is continually a feature.

#### The Aluminum Industry and the Hall Patent.

Of no little significance to the aluminum industry in the United States was the expiration on April 2, 1906, of the patent of Charles M. Hall, granted on April 2, 1889, and under which it has been possible for the Pittsburgh Reduction Company to maintain almost a monopoly of production in the United States. Recently the demand has been so heavy that this company has not been able to keep up with it and domestic consumers have turned to Europe, but even at the high prices paid abroad it has not been possible to obtain any considerable quantities. The large requirements of the automobile industry are responsible chiefly for the expansion in demand in recent years. Referring to the expiration of the Hall patent and its effect on aluminum manufacture the *Metal Industry* makes the following interesting statement:

It will be remembered that this patent, which became of fundamental importance for the commercial production of aluminum, protected the use of an electrolyte composed of cryolite as a solvent for bauxite, and this electrolyte had the most important property of being easily fusible. The extension of the manufacture of aluminum followed and the three-cornered litigation about patent rights between the Pittsburgh Reduction Company, as owners of the Hall patent, and the Electric Smelting & Aluminum Company, the moving spirits of which were the well-known pioneers in the aluminum industry, the Cowles brothers, as owners of the Bradley patent, and, in the third place, Grosvenor P. Lowrey.

There is no doubt that owing to the scarcity and high price of the metal efforts will be made to start competing works after the Hall electrolyte becomes public property, and in fact there are many rumors of such proceedings already in the air. As far as the Pittsburgh Reduction Company itself is concerned, it must be remembered that though its electrolyte is public property, yet its method of operation is protected by the Bradley patent, which will not expire until February 2, 1909. The Bradley patent is of fundamental importance for the manufacture of aluminum, covering as it does the use of the current, as well for the purpose of keeping the electrolytic bath in a molten condition as for effecting its decomposition and setting the aluminum free at the cathode. It has been claimed variously that Mr. Hall never succeeded in producing aluminum commercially until he abandoned the method of conducting the electrolysis in a vessel heated from the outside by an exterior source of heat. If that holds true it seems to be very difficult for other people to get around the claims of the Bradley patent, in spite of their having an electrolyte of the proper nature. Moreover, the Pittsburgh Reduction Company has the immense advantage over its competitors of a large, well equipped plant, trained workmen and an experience of a number of years' duration, and is making strenuous efforts to enlarge its productive capacity.

What in view of the above considerations will be the future development of the aluminum industry is difficult to say. No doubt if competition should be successful the price of the metal would fall to a greater or less extent. As far as the Pittsburgh Reduction Company is concerned it must be said that it has never abused the privilege of having a monopoly for the purpose of putting a prohibitory price on the metal.

It is reported that the construction work on the briquetting plant of the Dunderland Iron Ore Company, Ltd., in Norway, has been completed and that a cargo of briquettes will be shipped to Scotland shortly. The iron ore deposits of the company are about 12 miles inland from the head of Ranen Fjord. The port is Guldsmædvik, at the head of the fjord, where piers have been built. A railroad has been constructed from the port to the iron mines. The ore is crushed, concentrated and then briquetted.





to material, workmanship and design. Whatever may be the cost of the training, the failure to furnish it would in the end be more costly. The State needs a wider diffusion of industrial intelligence as a foundation for the highest technical success, and this can only be acquired in connection with the general system of education, into which it should enter as an integral part from the beginning.

Of course these sweeping statements as applied to present-day manufacturing methods will permit of contention when present-day results are also taken into account. But passing by consideration of anything but the future needs of the country as regards skilled labor, it is well recognized that the apprentice system, the results of which still figure importantly in our industries, seems to revive but little under the lessons now being taught and that some substitute must be provided to care for the industries as they will exist a few years hence. The remedies suggested by the commission and in part embodied in its bill submitted to the Legislature lie along two lines of industrial education—one the existing school system from its elementary grades through the high schools, the other independent industrial schools. It is recommended that the curriculum of the elementary schools be changed so as to include instruction and practice in the elements of productive industry, and that the work of the high schools be so modified that instruction in mathematics, the sciences and drawing shall show application and use of these subjects in industrial life, with special reference to local industries. It may be doubted if the modern educator will co-operate willingly in bringing about an early realization of these suggestions. But the recommendation embodied in the following extract from the bill seems essentially practical, as has been demonstrated in various industrial schools already existing:

All towns and cities (or two or more cities and towns uniting as a district) may provide independent industrial schools for instruction in the principles of agriculture and the domestic and mechanic arts, but attendance upon such schools of children under 14 years of age shall not take the place of the attendance upon public schools as required by law. In addition to these industrial schools towns and cities may provide for evening courses for persons already employed in trades, and they may also provide, in the industrial schools and evening schools herein authorized, for the instruction in part time classes of children between the ages of 14 and 18 years who may be employed during the remainder of the day, to the end that instruction in the principles and practice of the arts may go on together.

Under the bill the State would bear a portion of the expense of industrial education, for it provides that where money is appropriated for the establishment and maintenance of independent schools for industrial training, or where new day or evening industrial courses in high or manual training schools are instituted, the State shall share the expense by a sum of money proportionate to the amount raised by local taxation and expended for the support of schools; towns and cities expending more than \$5 for \$1000 of valuation for the support of public schools to be reimbursed by the State to the amount of one-half; those expending between \$4 and \$5 per \$1000 to the amount of one-third, and those expending less than \$4 to the amount of one-fifth of the cost of maintaining industrial courses or industrial schools. This would be liberal State aid, and doubtless it would be but fair that the State should share the expense of a class of schools which would produce skilled labor to be later widely distributed.

### The Supply of Manganese Metals.

The Government figures of ferromanganese imports in the third quarter of 1905, quoted in an editorial in these columns on March 15, have been revised by the Bureau of Statistics to correct two errors in its original publication. The imports of ferromanganese as now stated are 874 tons greater than was first given, or 13,313 gross tons, while instead of there having been no imports

of spiegeleisen in the third quarter of 1905, these imports amounted to 4836 gross tons. These corrections give slightly greater weight to the contention that the scarcity of ferromanganese has been due to increased consumption rather than to decreased supply. Further emphasis is given by the statistics for the fourth quarter of 1905, which have just now become available. The imports for consumption in that quarter are given as 12,910 gross tons of ferromanganese and 12,924 tons of spiegeleisen.

Reducing the spiegeleisen to ferromanganese equivalent by dividing by four, it is found that the total ferromanganese equivalent imported by the United States in the third quarter of 1905 was 14,522 tons and in the fourth quarter 16,141 tons, against an equivalent for the whole fiscal year ended June 30, 1905, of 46,777 tons. The imports of ferromanganese equivalent, ascertained by dividing the spiegeleisen reported by four and adding the quotient to the regular ferromanganese reported, have been as follows by fiscal years, the annual rates shown in the third and fourth quarters in 1905 being appended:

<i>Ferromanganese and Ferromanganese Equivalents Imported.</i>	
Year ended June 30,	Gross tons.
1900.....	14,088
1901.....	13,072
1902.....	45,472
1903.....	83,763
1904.....	36,558
1905.....	46,777
Annual rate, third quarter, 1905.....	58,088
Annual rate, fourth quarter, 1905.....	64,564

The domestic production and imports for consumption have been as follows, in gross tons:

	Ferro- manganese.	Spiegel- eisen.	Ferro- manganese equivalent.
Twelve months ended June 30,			
1905—			
Imports .....	41,166	22,443	46,777
Domestic production.....	65,756	164,818	106,961
Totals.....	106,922	187,261	153,737
Six months ended December 31,			
1905—			
Imports .....	26,223	17,760	30,663
Domestic production.....	26,965	137,684	61,386
Totals.....	53,188	155,444	92,049

It will be seen that the imports of ferro in the second half of 1905 were at a greater rate than in the year ending June 30, 1905, while the domestic production, owing to smaller imports of manganese ores, fell off correspondingly; so that the total for the half year represented the same rate as in the fiscal year. In spiegel the domestic production increased very considerably in the second half of last year, as compared with the rate for the fiscal year ending June 30.

### Tin Plate Prices and Current Costs.

In a review of the sheet and tin plate industries for the year 1903, printed in *The Iron Age* of January 7, 1904, the fact was pointed out that a great change had occurred in the relative market prices for tin plates and for sheets, which was not to be accounted for by any change in the market price of pig tin or other items entering into the cost of production. At the beginning of 1903 the spread between 100 pounds of No. 28 gauge one pass box annealed sheets and a box of 100-pound coke tin plates was about 90 cents; at the close of the year the spread was about \$1.30. These comparisons were made not by a mere reference to current official prices, as it was recognized that such a comparison would not at all times be a just one, tin plates being usually sold further ahead when the market is low than is the case with sheets. The comparison was made between prices which were actually being paid.

Through 1904 and the first half of 1905 the greater spread established in the latter part of 1903 was quite

steadily maintained, being generally between \$1.20 and \$1.30, and during this time the price of pig tin fluctuated very little, there being a general swing toward a price 2 or 3 cents higher.

Beginning with the third quarter of 1905 pig tin started a sharp upward movement, but the spread did not increase. The minimum prices, which were made during the second half of 1905, represented a spread of \$1.20. The spread at the present time between the "official" prices, with the 10-cent advance in tin plate announced last week, is \$1.20. The spread between the cost of the tin plates which will be delivered during the present quarter and the sheets which will be delivered during the same period can be estimated as between \$1.05 and \$1.10. When a spread of 90 cents ruled at the beginning of 1903 pig tin, taking the average of January, 1903, was 28.30 cents a pound at New York. Last week tin averaged 38.65 cents. The difference of 10.35 cents represents about 22½ cents per box of tin plate, and deducting this from the spread of \$1.05 to \$1.10 on deliveries for this quarter leaves 85 cents, or only 5 cents less than the old spread.

In other words, then, allowing for the advance in pig tin, there was an increase in the spread in 1903, and this increase was kept up until the latter part of 1905, but now the spread has gone back to the old amount which ruled early in 1903 and in previous times.

Manufacturers of tin plate are disposed to complain of the low prices ruling in the market for their product, along with high prices for raw material, but the fact is that old relative conditions have been re-established.

There is an important difference, however. During 1902, for instance, excellent profits were realized in both the sheet and tin plate industries. Both have now gotten close to bed rock. As was pointed out in the article already referred to the increase in the spread during 1903 was brought about by the force of independent competition in sheets, while competition was less keen in tin plates.

At the present time the competition in tin plates is also keen, although there is not the reason for it that there is in sheets, there being a much smaller proportion of independent mills. There is a mere handful of independent tin mills, whether the term be used in a figurative sense or as representing a finger for each plant of market importance. It is seldom that in an industry comprising so few units there is such sharp competition.

The lowest prices on domestic tin plate were made in the fall of 1898, when \$2.55 at mill was done. At that time tin was 17 to 18 cents a pound, sheet bars \$16 per ton and coal about 75 cents. The advances in these three items—tin to 38 or 39 cents, steel to \$28 and coal to well over \$1 a ton—add about \$1.60 to the cost of making a box of tin plate. The skilled labor at the hot mills is scarcely changed; the base of the scale is slightly lower, but the screwboy and shearman are paid more money, so that the total reduction is not over a couple of cents per box. The common labor in the mill and all the tin house labor are better paid than in 1898, while practically all supplies, such as rolls, brasses, acid, flux, oil, &c., are higher. It is conservative to say that advances have occurred which would, other things being equal, add more than \$1.00 to the cost of making a box of tin plate, which prevailed when the minimum selling price of \$2.55 was done. These advances would thus point to a selling price of \$4.15. It is a fact that some contracts are now being filled at 90 cents less than this. We said "other things being equal," but they are not equal. Many minor economies have been introduced and in the aggregate they amount to a round sum. Outputs are much larger, while the number of men employed in the mill as a whole

has decreased instead of increasing, so that the labor cost per ton has been greatly reduced and the proportion of the general expenses to be borne by each ton of output has likewise been greatly reduced. These economies have not, however, fully made up the difference, and it is quite certain that the profits of a well regulated tin mill are now less than at the time when the lowest prices in the history of the industry were being made.

### The New York General Metal Works.

Aside from the fact that important business interests are brought together and that the manufacturing facilities are to be greatly enlarged, the organization of the New York General Metal Works is of interest because it is placing on the market a practically new line of products. This new company, which has just been incorporated with a capital stock of \$1,000,000, has taken over the business of the Nonick Company, controlling patents for the invention of C. F. Marsh, and that of the Architects Bronze Works, owners of Dr. John F. Daly's patents on architects' bronze and metal lace inventions. The Nonick Company was owned by Lewis Rodman Schultz, G. Foote Marsh, J. P. Gaylord and Dr. James H. Bertenshaw, who were instrumental in bringing the merger about and who hold an important interest in the New York General Metal Works. In taking over the other two companies, the new company secures a well equipped plant which, however, is far too small to supply the demand for the various products, and it is now looking for a suitable plant within a radius of 25 miles of New York in order that it may increase its facilities five or six times. There will be required a great deal of special machinery, but the company will also purchase quite a few machine tools and considerable electric equipment.

The chief output of the company at the present time is architects' bronze, and it has large orders on hand from important architects in the United States and Canada for columns, capitals and other large work for hotels, theaters and large buildings. In addition, the company produces metal grills, balustrades, newel posts, metal window frames, chandeliers and a number of specialties made of wood, plaster or other material and covered with metal, the material being left in or taken out, in the latter case leaving only a shell of solid metal. In this process the metal is deposited on the material and is entirely homogeneous. The process differs from ordinary electroplating, particularly in respect to the absence of layers or strata in the deposit, and increases the tensile strength of the materials, giving an electro deposit homogeneous and uniform. The finish may be bronze, copper, brass, silver and gold in any color which metal is capable of showing, and the form may be anything, but the product is metal. Under the patents of the Nonick Company a metal rim, seamless and indestructible, is deposited around the edge of china or glass or on any part desired to protect the articles and creating what is known as Nonick china and glassware. The metal can be deposited on any material, and is particularly valuable in making interiors absolutely fireproof, even to the lamp shades, lace curtains and such articles. The office of the company is at 9 East Twenty-second street, New York.

**The New England Foundrymen's Association.**—The April meeting of this association, held at the Exchange Club, Boston, April 11, was addressed by Prof. Albert Sauveur, manager of the Boston Testing Laboratories, on "The Relation Between the Properties of Cast Iron and Its Structure," the talk being illustrated by stereopticon views. The Sessions Foundry Company, Bristol, Conn.; A. F. Nichols, Lowell, Mass., and Charles H. Bird, Boston, were admitted to membership. The next meeting will be held in Providence, and Charles T. Colvin was made a committee of one to arrange for a visit to the plant of the Providence Steel Casting Company.

\* April 16 broke all immigration records; no less than 18,338 applicants for admission to the United States having arrived in New York Harbor on that day.



## March Records of Production.

### Made by the Constituent Companies of the United States Steel Corporation.

During March an extraordinary number of records of production were made by different departments, mills and furnaces of the constituent companies of the United States Steel Corporation. These records refer to the best work performed in each individual or group of furnaces, mills, &c., in its or their territory. They do not necessarily constitute a record in the general type of plant.

We print below some of the most striking figures. The records themselves are much more numerous. Thus, in the plants of the Carnegie Steel Company over 100 records were broken. We do not include in the list the Duquesne blast furnace records, which have been published in *The Iron Age*:

CARNegie STEEL COMPANY:		Best previous record.	March, 1906.
Carrie Furnaces, total.....	January, 1906..	64,501	66,520
Ohio Furnaces, total.....	November, 1905.	61,556	63,633
New Castle Furnaces, total.....	January, 1906..	60,086	61,093
Mingo Furnaces, total.....	February, 1906..	39,900	47,354
So. Sharon Furnaces, total.....	January, 1906..	37,038	40,015
<b>Duquesne Steel Works:</b>			
Converting department.....	October, 1905..	60,644	62,401
Open hearth department.....	October, 1905..	46,230	50,297
38-inch mill.....	March, 1905..	64,985	67,280
21-inch mill.....	March, 1905..	42,778	44,825
16-inch mill.....	March, 1905..	19,034	19,267
13-inch mill.....	January, 1906..	12,161	13,011
Total.....	October, 1905..	306,704	327,644
Upper Union Mills, total.....	October, 1902..	31,812	34,286
Lower Union Mills, total.....	January, 1906..	15,414	15,477
Howard Axle Works, total.....	March, 1905..	27,512	27,657
<b>Homestead Steel Works:</b>			
Open hearth No. 1.....	May, 1905.....	23,206	25,869
Open hearth No. 2.....	March, 1905.....	53,198	56,413
Open hearth No. 3.....	March, 1905.....	80,269	83,070
40-inch mill.....	August, 1905.....	24,734	26,416
35-inch mill.....	August, 1905.....	22,330	23,405
30-inch mill.....	March, 1903.....	32,673	34,319
32-inch mill.....	October, 1905.....	30,468	31,112
140-inch mill.....	May, 1905.....	14,459	16,111
Total.....	March, 1905.....	423,849	463,915
<b>Clairton Steel Works:</b>			
Open hearth department.....	October, 1905.....	49,257	53,014
40-inch mill.....	January, 1906.....	41,746	46,909
28-inch mill.....	March, 1905.....	29,741	33,213
Total.....	January, 1906.....	125,114	147,251
<b>Donora Steel Works:</b>			
Open hearth department.....	January, 1906.....	45,941	46,469
Blooming mill.....	October, 1905.....	32,844	38,559
Total.....	January, 1906.....	78,131	85,028
<b>Ohio Steel Works:</b>			
Converting department.....	October, 1905.....	71,917	74,698
Blooming mill.....	October, 1905.....	65,848	70,722
Rail and billet mill.....	October, 1905.....	61,331	65,817
Continuous billet mill.....	October, 1905.....	24,235	26,936
Total.....	October, 1905.....	223,331	238,173
Bellaire Steel Works, total.....	November, 1905.	97,756	103,097
<b>South Sharon Steel Works:</b>			
Open hearth department.....	January, 1906.....	43,259	52,015
Blooming mill.....	January, 1905.....	26,416	31,030
Universal plate mill.....	November, 1905.	11,310	14,201
Total.....	January, 1906.....	78,742	97,246
Sharon Steel Works, total.....	October, 1905.....	34,755	38,966
<b>Upper Union Mills, Youngstown, total.....</b>			
October, 1905.....	15,236	17,010	
Total pig iron production.....	January, 1906.....	598,750	639,146
Total ingot production.....	October, 1905.....	752,387	802,870
<b>ILLINOIS STEEL COMPANY:</b>			
South Steel Works, total.....	May, 1905.....	251,723	269,485
Joliet Steel Works, total.....	January, 1906.....	149,510	156,522
<b>AMERICAN STEEL &amp; WIRE COMPANY:</b>			
Newburg Steel Works, total.....	November, 1905.	144,873	155,421
Shoenberger St'l Wks, total.....	November, 1904..	77,229	79,175
Total ingot production.....	November, 1905.	123,849	134,598
Consolidated Works.....	March, 1905.....	10,161	10,667
American Works, total.....	January, 1906.....	13,487	15,258
Total steel and iron rod production.....	March, 1905.....	112,737	114,712
<b>AMERICAN SHEET &amp; TIN PLATE COMPANY:</b>			
Etna Standard black sheets.....	October, 1905.....	10,893	10,984
Total black sheets, sheet mills.....	January, 1906.....	54,761	56,848
Total galvanized sheets, sheet mills.....	January, 1906.....	20,746	21,689
Total black plate, tin mills.....	January, 1905.....	48,596	49,802

In the above tables the date of the best previous record and the quantity produced are recorded. The unit is the gross ton throughout.

## Five New Blast Furnaces to Be Built.

The Carnegie Steel Company has placed a contract with the Riter-Conley Mfg. Company, Pittsburgh, for the iron work for the two new blast furnaces to be built at the Carrie group at Rankin, Pittsburgh. The stacks will be 22 x 85 feet, with a daily capacity of about 600 tons each. Modern ore handling equipment will be installed by the American Bridge Company. The excavating work has been nearly finished and it is the intention to rush the iron work as fast as possible. These two furnaces will make a total of seven at the Carrie group, making it next in number to the Edgar Thomson group, which has 11 furnaces.

Corrigan, McKinney & Co., Cleveland, Ohio, have awarded a contract to the Pennsylvania Engineering Works, New Castle, Pa., for the building of a blast furnace at Black Lick Junction, Indiana County, Pa. The furnace will have a daily capacity of about 500 tons. The firm has large coking coal interests at Black Lick Junction and will erect a large battery of coke ovens to make coke for the new furnace. Ore will come in over the Buffalo, Rochester & Pittsburgh Railroad, with which line the furnace will have direct connection.

The Shenango Furnace Company, whose offices are in the Frick Building, Pittsburgh, and which operates four blast furnaces at Sharpsville, Pa., has definitely decided to erect two more blast furnaces at that place. The new furnaces will likely be 20 x 85 feet and will each have a daily capacity of about 500 tons. It is expected that within a short time contracts for the furnaces and equipment will be given out.

## The Anthracite Operators Maintain Their Stand.

The formal answer of the anthracite operators' committee of seven to the last offer of the committee of the anthracite mine workers embodies an unqualified refusal of the terms set forth and goes into a review of the propositions on both sides. It points out that the offer to have an agreement made with the anthracite mine workers instead of the United Mine Workers is merely a matter of form, inasmuch as the miners' committee represents the United Mine Workers. The miners' committee is reminded that the present suspension of work was ordered by the union officers for no good or sufficient reason pending negotiations. While the letter of the operators does not state specifically that their last offer still holds good, it is believed to hold until a break comes, as does also the alternative offer to continue the agreement under the award of the Anthracite Strike Commission, which expired March 31, for three years longer. Meantime the operators are under no pledge to refrain from attempting to break the strike, as the suspension of work is to all intents and purposes looked on as a strike. Preparations are being made, however, by the operators for strike emergencies, and the starting up of the washeries is considered the entering wedge in breaking the deadlock at the collieries.

**Gas Engines for Steel Corporation Furnaces.**—The Snow Steam Pump Works, Buffalo, N. Y., has received an order from the Illinois Steel Company for two 2500 horse-power gas blowing engines, for the new plant on which construction will soon begin at Gary, Ind. These are the first gas engines the Snow Steam Pump Works has engaged to build for blast furnace service. The Allis-Chalmers Company, it is stated, has an order for two of its Nurnberg gas engines, to be installed by the Illinois Steel Company at its new blast furnace plant.

At the recent annual meeting of the Joseph Dixon Crucible Company the old board, consisting of Edward F. C. Young, John A. Walker, Edward L. Young, William Murray, George T. Smith, Joseph D. Bedle and George E. Long, was re-elected. The directors re-elected the former officers, F. C. Young, president; John A. Walker, vice-president and treasurer; George E. Long, secretary. Judge Joseph D. Bedle was re-elected counsel.

## PERSONAL.

Axel Sahlin of Julian Kennedy, Sahlin & Co., Limited, Brussels, Belgium, who has been in the United States for the past three weeks, sailed on Tuesday, April 17, on the Kaiser Wilhelm.

A. D. Hatfield, treasurer of the Wellman-Seaver-Morgan Company, Cleveland, sailed for Europe last week for a stay of two months.

Chas. Wainwright, for the past three years superintendent of the Blaisdell Machinery Company, Bradford, Pa., has become superintendent of the Bury Compressor Company, Erie, Pa. Mr. Wainwright was formerly connected with the Ingersoll-Sergeant Drill Company, Easton, Pa.

A. E. Canby, formerly supply agent of the La Belle Iron Works, Steubenville, Ohio, is now connected with James Bonar & Co., Incorporated, Frick Building, Pittsburgh, makers of steam appliances, machinists, brass founders and sheet metal workers.

James A. Campbell, president of the Youngstown Sheet & Tube Company, Youngstown, Ohio, will soon announce a number of important appointments of positions in the new Bessemer steel plant, which is expected to be ready for operation about August 1.

J. L. Lewis, president of the Lewis Foundry & Machine Company, Pittsburgh, has returned from a long sojourn in California.

Ferdinand Boecking and Wilhelm Laue of the Halberg Works, Saarbruecken, Germany, are now in this country.

Dr. Charles B. Dudley, chief chemist of the Pennsylvania Railroad, is taking a well earned vacation. Accompanied by Mrs. Dudley he will spend some weeks in Europe.

Richard Peters, Jr., formerly secretary of the Solid Steel Casting Company, Chester, Pa., and afterward connected with a Southern blast furnace operation, is now engaged in the development of white marble deposits at Talladega, Ala.

A. A. Schaefer, formerly general sales agent for New York City and vicinity of the Standard Engineering Company, Ellwood City, Pa., has severed his connection with that company and is now associated with the Stoeber Foundry and Mfg. Company, Myerstown, Pa., making his headquarters in its New York office, 95 Liberty street.

At a meeting of the Board of Directors of the Westinghouse Electric & Mfg. Company, held April 10, L. A. Osborne, formerly third vice-president of that company, was elected second vice-president to succeed Frank H. Taylor, resigned. Mr. Taylor, who is also a director of the company, will retain his seat on the board. He will soon sail for Europe for a prolonged rest. Mr. Osborne, as third vice-president, had the direction of the engineering and manufacturing activities of the company. As second vice-president he will assume the direction of the commercial activities of the company, while retaining those of the engineering department.

L. R. Lemoine has been elected general manager of the New Jersey Zinc Company, with office at 71 Broadway, New York. R. M. Catlin has been appointed superintendent of mines, with headquarters at Franklin Furnace, N. J.

George H. Blakeley, formerly chief engineer and contracting manager of the Passaic Rolling Mill Company, Paterson, N. J., has been appointed structural engineer of the Bethlehem Steel Company, South Bethlehem, Pa.

Thomas B. Riter, president of the Riter-Conley Mfg. Company, Pittsburgh, builder of iron and steel construction work of all kinds, has sailed for Europe, to be gone several months.

R. T. Harris has been appointed superintendent of the open hearth steel department of the Lackawanna Steel Company. He was formerly in charge of the steel foundry of the National Electric Company, Milwaukee, Wis.

Dr. G. G. Revay, 45 Cedar street, New York, fuel specialist, sailed Tuesday for Europe. Several members of the staff of the United States Steel Corporation sailed also for the purpose of inspecting different plants in

connection with projects now under consideration at its various works. Dr. Revay also intends to investigate some new electrolytical processes, which, it is said, will be established in America under most advantageous conditions.

John A. Topping, president of the Republic Iron & Steel Company, Pittsburgh, has been elected a director of the Iron City Trust Company of that city.

W. F. Dell, department superintendent at the Duquesne Steel Works of the Carnegie Steel Company, has resigned and has been succeeded by Joseph A. Hughes.

## OBITUARY.

WILLIAM B. RIDER, widely known as a hydraulic engineer, died at Cannons, near Danbury, Conn., recently, aged 64 years. He was a native of Norwalk, Conn.

LEMUEL BANNISTER, for many years vice-president of the Westinghouse Electrical & Mfg. Company, died April 13 at the Hotel Imperial, New York, aged 65 years. He was born in Philadelphia, and first engaged in the lumber business. In 1888 he went to Pittsburgh, becoming connected with the Westinghouse Company. He was practically at the head of the European business, to take charge of which he left America ten years ago. He built the electrical railways in Berlin and other European cities. He retired from active business a few years ago. He was a member of the Lawyers' and Engineers' clubs of New York and the Duquesne Club of Pittsburgh.

FRANCIS H. SAYLOR, president of the Philadelphia Bridge Works, died April 12, at Germantown, Pa. He was born in 1844 in Schuylkill Haven, Pa., was graduated from Amherst College in 1865 and from the Rensselaer Polytechnic Institute, Troy, N. Y., in 1868. In early life Mr. Saylor was civil engineer in the engineering department of the Philadelphia & Reading Railroad. He surveyed, built and managed the Bound Brook Railroad, now a part of the Reading route between Philadelphia and New York. Later he superintended, as chief engineer, the construction of the Pittsburgh & Lake Erie Railroad. At this time he was a member of the firm of Cofrode & Saylor, bridge builders, and had an extensive plant at Pottstown, Pa. A widow and two children survive him.

HENRY WARD BEECHER HOWARD, assistant secretary and treasurer of the American Institute of Mining Engineers, died April 16 at his home in Brooklyn, N. Y. He was 57 years old and a graduate of Yale. After leaving college he did newspaper work in New York for several years, and later became bursar of the Brooklyn Polytechnic Institute. He leaves a widow and a daughter.

**Effects of Vanadium in Steel.**—An article under this title was printed on page 1273 of the issue of *The Iron Age* for April 12, in which a typographical error was made which, however, was so palpably incorrect that probably our readers were able to make the correction themselves. The statement which appeared was that "the amount of vanadium used in manufacturing these special steels varies from 10 to 20 per cent." The percentage figures should have been 0.10 to 0.20.

The annual meeting of the United States Steel Corporation was held April 16, at Hoboken, N. J. Usually great interest is taken in these meetings by the holders of the company's securities, but this gathering was entirely uneventful. All the retiring directors were re-elected. The meeting of the board, which will choose the officers for the coming year, will be held April 24. So far as known, no important changes are likely to occur in the official staff. Following the annual meeting of the Steel Corporation itself, meetings were held of the stockholders of all the subsidiary companies and nearly all the retiring directors were re-elected.

The free alcohol bill, providing for the removal of taxation from denaturalized alcohol for industrial uses, passed the House of Representatives April 16 by a vote of 224 to 7.



## New Publications.

**Report on the Operation of the Coal Testing Plant of the United States Geological Survey at the Louisiana Purchase Exposition, St. Louis, Mo., 1904, Edward W. Parker, Joseph A. Holmes, Marius R. Campbell, Committee in Charge.**—Part I, Introduction, by Edward W. Parker; Field Work, Classification of Coals, by Marius R. Campbell; Work of the Chemical Laboratory, by N. W. Lord; pp. 300, map and ill. Part II, Boiler Tests, by L. P. Breckenridge; pp. 681, ill. Part III, Producer Gas Tests, by Robert H. Fernald; Coking Tests, by Fred. W. Stammeler; Melting Tests with Cokes, by Dr. Richard Moldenke; Briquetting Tests, by Joseph Hyde Pratt; Washing Tests, by John D. Wick; pp. 493, ill.

Following is an abstract of a review of this report by Samuel Sanford of the United States Geological Survey:

This bulky report gives in much detail an account of the equipment of the coal testing plant at St. Louis, the methods employed and the precautions taken to insure accuracy in the data obtained. A preliminary statement of the more striking features of the work was published by the Survey a year ago as Bulletin No. 261, but a careful perusal of these three volumes will well repay any one who read that bulletin.

So far as the author is aware, no nation has ever undertaken to analyze under standardized conditions and compare in so many ways such a variety of coals. The German Government has a testing laboratory just outside Berlin, that covers a wide field of work, and the Belgian Government, at Frameries, has what is probably the finest coal mining experiment station in the world, but at neither of these places has any work been done that is in the same class with that done at the plant at St. Louis. As for Great Britain, which was until 1899 the leading coal producing country of the world, practically all that has been undertaken there has been carried through by firms or by individuals, with the exception of occasional steaming tests under the supervision of the Admiralty.

In part I Mr. Parker briefly describes the conditions under which the work was undertaken, the buildings and their equipment, mentions the personnel, and summarizes some of the more striking results; Mr. Campbell gives the location and equipment of each mine visited, the geologic position of the coal seams sampled, the methods used in sampling, and a proposed new classification of coals according to the ratio of the contained hydrogen to the total carbon, which is highly suggestive and forms an important addition to the literature of coal; and Mr. Lord, in his description of the work of the chemical laboratory, gives an interesting account of the method of collecting, handling and analyzing samples. A proximate analysis and a determination of sulphur were made in practically every sample that came into the laboratory. Ultimate and proximate analyses and determinations of calorific value were made on each car sample. The most important result of the chemical work, whether viewed from a purely scientific or from a strictly commercial standpoint, is the knowledge gained regarding the moisture content of coal. This question has been under consideration by the chemists of the Geological Survey for two years or more, and though the statement may seem surprising, has not been discussed in European technical periodicals until within a year or so.

In Part II of the committee's report Professor Breckenridge describes the equipment of the boiler plant and the methods used in making the boiler tests, 78 in all, of which 70 are regarded as satisfactory and complete in all details. Two Heine 210 horse-power water tube boilers, a 250 horse-power Allis-Chalmers simple Corliss engine and a Bullock 200-kw. direct current generator constituted the essentials of the plant. A water rheostat was used to equalize the load on the engine. The boilers had plain grates and were hand fired. The action of the coals on the grate, the amount of clinkers formed, the amount of free ash falling through the grates and the labor required to handle the fire successfully were noted. The conditions of the tests made it impossible to conduct more

than one test with each coal. The tests were run as nearly ten hours as consistent with correct results, and the attempt was made to close each test with the same load, condition of fire, water level and steam pressure as at the beginning. The observations are published both in tabular form and in graphic charts. In addition, the important items and results of the 78 tests are summarized by States, so that the items of chief interest, such as rate of combustion, horse-power developed, temperature of escaping gases and evaporation per pound of efficiency can be readily traced.

Part III contains a greater variety of material than the other two volumes, and also an account of what was, from a commercial standpoint, the most valuable work done at St. Louis, the demonstration of the possibilities of the gas producer and gas engine in comparison with the boiler and steam engine, and, in particular, the proving of an unexpectedly high efficiency for lignites when used in the producer. This last fact opens up all manner of possibilities for cheap power in regions where the lack of high grade coals has been regarded as a barrier to industrial progress. Criticism based on present prices for producer plants and gas engines and higher depreciation charges have little weight in view of the advance in gas engine design in the past ten years. Professor Fernald, who had charge of the gas producer tests, describes the apparatus, the methods used, and the manner of working up results. A 250 horse-power capacity Taylor pressure gas producer and a Westinghouse vertical three cylinder engine were used. The engine was belted to six-pole 175-kw. Westinghouse direct current generator. The load on the engine was controlled by, and the energy developed dissipated through, water rheostats. In all 24 different coals and lignites were used, and 22 of the tests were conducted on a 30-hour basis. Owing to the desire to test as many coals as possible, the highest efficiency was of secondary consideration, the aim being to demonstrate the possibility of using the coals in a producer.

The briquetting tests conducted under the supervision of Dr. Joseph Hyde Pratt are as valuable for their showing that certain coals can be made into briquettes on a commercial scale with the binders supplied and the equipment used, as for demonstrating that many can not. The chief drawback to the industry in this country is not so much a high wage rate, since the labor cost can be minimized by automatic machinery, as the high price of suitable binders. In Germany, where the by-product coke oven is the prevailing type and the utilization of by-products is carefully studied, suitable pitch can be cheaply had—also the so-called magnesia cement, a by-product of the great Stassfurt potash salts industry. Perhaps the least satisfactory work at St. Louis, considering the opportunity, was with the washing plant and the coke ovens. Messrs. Wick and Stammeler did all that could have been expected of them under the circumstances, but the equipment at their disposal was not nearly as complete as it would have been had the commissioners been able to purchase apparatus. The washing plant consisted of two jigs and the coking plant of beehive ovens. It is much to be regretted that at a plant where such systematic and painstaking work was done, better equipment could not be had. The jigs installed did, indeed, show that certain coals were benefited by their use, but coals vary not only in the ash and sulphur content but in the manner those impurities are distributed, and to purify some coals such fine crushing is necessary that jigs of the types tested at St. Louis are not the most economical devices.

In conclusion the writer states his belief that the chief value of the work so ably carried out under the supervision of Messrs. Parker, Holmes and Campbell is its demonstration of the importance of standardization. Done at a time when the public is coming to realize the utility of waste prevention and the commercial value of small economies, it sets a standard for other tests, not only of fuels but of materials of construction, which can be undertaken to better advantage and to the greater benefit of the public under Government supervision than by an individual or by a corporation or combination of corporations.

## NEWS OF THE WORKS.

### Iron and Steel.

At the No. 3 stack of the Carnegie Steel Company, at Youngstown, Ohio, a slip in the latter part of March caused some damage and the furnace was out of blast until April 5.

The blast furnace of the Lookout Mountain Iron Company, at Battelle, Ala., was blown out on March 21, following the appointment of a receiver for the company.

Musconetcong Furnace, at Stanhope, N. J., blew in on April 9, having been out for repairs since the latter part of December.

The Midland Steel Company announces that its general offices are now located in the German National Bank Building, Pittsburgh. It has nearly completed a large blast furnace near Beaver, Pa., which will be ready for blast within a short time. The company will manufacture basic, malleable foundry and forge pig iron, and has plans made for five blast furnaces at the above place. As soon as the first stack is finished and in operation work will start on the building of a second stack.

The new continuous rod mill of the Morgan Spring Company at Struthers, Ohio, is nearly completed, and will be started early in May. When the rod mill is put in operation work will be started at once on other extensions to the plant. Machinery for the manufacture of springs, a wire drawing plant and other improvements will be installed.

The Southern Steel Company, Birmingham, Ala., has floated a bond issue of \$3,000,000, with the proceeds of which it will build its proposed rod and wire mills, additional open hearth steel furnaces, blooming mill and nail mill at Gadsden, Ala., where it has a blast furnace and steel plant of 400 tons capacity. The company owns large coal and ore acreage. The nail mill at Ensley, which was recently burned, has been nearly rebuilt and will probably be placed in operation the early part of May. The new nail mill at Gadsden is to be a duplicate of the one being rebuilt.

The Crucible Steel Company of America, Pittsburgh, is preparing plans for the building of a large plant in that city for the manufacture of steel railroad springs. It will be located on ground bought by the concern at Thirty-eighth street and Allegheny Valley Railway formerly occupied by the Pittsburgh Bridge Company.

### General Machinery.

The Hurley Machine Company, Chicago, has incorporated with a capital stock of \$150,000 to manufacture the Little Giant floor scraper, the Little Giant electric sandpapering machine and the Little Giant electric floor polisher and surfacer. The plant of the company will be located at 153 to 159 South Jefferson street, Chicago, and offices have been opened in New York at 1010 Flatiron Building. Incorporators of the company are Edward N. Hurley, John Maynard Harlan and S. E. Sheehan.

The B. B. Potter Company has been established at Griffith, Ind., Chicago suburb, to manufacture machinery, hardware and farm implement specialties and do a general machinery repair and foundry business. Orders are being taken now for delivery after May 1. B. B. Potter, secretary and treasurer of the North Star Iron Works, Hammond, Ind., is owner and manager, and John Helfen superintendent.

The Wagner Electric Mfg. Company, St. Louis, Mo., has completely outgrown its present quarters and has bought a tract of land 15 acres in extent just out of the city. The company has engaged Dodge & Day of Philadelphia to make the layout, design buildings and select the necessary equipment. The preliminary layouts have been submitted and the buildings decided upon. Work will be started at once, and about one-third of the ground will be covered by buildings before the end of the present year.

The Union Machinery & Supply Company, Seattle, Wash., is contemplating the erection of a large pattern shop, blacksmith shop and boiler shed.

The Sawyer Tool Mfg. Company, Fitchburg, Mass., manufacturer of machinists' tools, has been reorganized, J. F. D. Garfield, the president, and Edward D. Garfield, the treasurer, having disposed of their holdings to Carlton A. Hubbell, formerly superintendent of the Fitchburg works of the Simonds Mfg. Company. E. E. Ellis, vice-president of the company, retains his interest and his connection with the administrative department of the business.

The Power & Mining Machinery Company, Milwaukee, Wis., has shipped to the General Crushed Stone Company for its plant at Rock Hill, Pa., a No. 9 rock and ore breaker and is also building for the same company, for use in its North Leroy, N. Y., plant, a No. 10 breaker, which is said to be one of the largest machines of its kind ever built.

The Hardie-Tynes Mfg. Company, Birmingham, Ala., has since the first of the year added new tools which have increased the output of the plant 10 per cent. Still further improvements are in contemplation, but plans have not been fully decided upon. The company manufactures Corliss and slide valve engines, hoisting engines, air compressors, dredge mining and mill machinery.

The Badger State Machine Company, Janesville, Wis., recently

made a shipment of a large boiler makers' punch to a boiler shop in Germany which is to be operated by hand power. This punch weighs 196 pounds, punches to center of 48 inches and has a capacity of a 1-inch hole in 1/2-inch iron. The adjustment of the punch makes it possible to operate the same by one man.

Richmond & Holmes, builders of engines, St. Johns, Mich., are planning the erection of an addition to their plant, 36 x 50 feet. Some new machinery will be purchased.

Bertsch & Co., Cambridge City, Ind., recently built a large hydraulic shear for the Worth Bros. Company, Coatesville, Pa., which weighs nearly 55 tons, has 10 1/2-foot blades and has a capacity for cutting 1-inch iron plates 10 inches wide in a single stroke. The shear has 18-inch throat housings, and is the second one shipped to the Worth Bros. Company, the former one being for lighter work. Bertsch & Co. have two of these hydraulic shears in the plant of the Lukens Iron & Steel Company at Coatesville.

The Hicks Locomotive & Car Works, Chicago, Ill., has been incorporated with a capital stock of \$1,200,000. The incorporators include Samuel H. Lever, Frank P. Holman, formerly connected with the Rogers Locomotive Works; Stanley L. Smith, Robert Giles and George B. Sadler.

The Earhart Steel & Iron Works, Sacramento, Cal., has been organized with a capital stock of \$500,000 to manufacture the Earhart nut lock and other supplies. The company intends to install a plant and expects to purchase bolt machines from the Wylie & Russell Mfg. Company, replacing the carriage on the machines by one invented by Mr. Earhart, which is adapted to the manufacture of the nut lock. It is the intention at the same time to install all machinery and tools necessary for a machine shop and enlarge the equipment as the business may require, until the company has everything needed for forge and foundry work. Thomas B. Earhart is president and M. S. Wahrhaftig, secretary.

The Asheville Supply & Foundry Company, Asheville, N. C., which operates a completely equipped machine shop and foundry and deals in machinery, has increased its capital stock to \$22,500. In the near future the company expects to increase its warehouse facilities so that it can carry supplies in carload lots and do a general jobbing trade.

The Piedmont Supply & Foundry Company, Asheville, N. C., has incorporated with a capital stock of \$10,000, and is equipping a shop for general machine and foundry work. The company would be pleased to hear from dealers in second-hand machinery, and at the present time is in the market for one 12-inch gear cutter, one 20-inch engine lathe with 12-foot bed and one power grindstone. C. H. Hopkins is president, William Farr, vice-president and treasurer; D. J. Hollinger, secretary, and D. Kimberly, superintendent.

That the importance of purifying and humidifying air used in large buildings is being realized more and more is evidenced by the report from the Buffalo Forge Company, Buffalo, N. Y., of the following orders for its Buffalo air washer and humidifier: Illinois Steel Company's office, Chicago; Carnegie Branch Library, St. Louis; American Lady Corset Company factory, Detroit; Buffalo Evening News, Buffalo; Wouters Laundry, Chicago, and Burton F. White, restaurant, Chicago.

### Power Plant Equipment.

The MacKinnon Mfg. Company, builder of boilers, engines and other machinery, Bay City, Mich., has just completed the shipment of several carloads of steel plate and construction work, in the way of tanks, &c., to the new sugar house of the Eastern Sugar Company, Glendale, Ariz. An order was also received recently from the Diamond Crystal Salt Company, St. Clair, Mich., for ten large high pressure special heaters for the latter company's new salt plant.

The Westinghouse Machine Company, East Pittsburgh, during the months of February and March received orders for 35 steam turbines, aggregating approximately 50,000 brake horsepower capacity. The most important equipments were those ordered by the Transit Development Company, Brooklyn, 7500 kw.; Toledo Gas & Electric Company, 3000 kw.; Los Angeles Pacific Railway Company, 2750 kw.; Detroit United Railways, 1200 kw.; Columbia, S. C., Electric Street Railway Company, 3000 kw.; St. Paul Gas Light Company, 1500 kw.; Grand Trunk Railroad, for St. Clair Tunnel, 3000 kw.; Detroit & Toledo Shore Line Railway, 1200 kw.; Northern Heating & Electric Company, St. Paul, 1000 kw., and Griffin Wheel Company, Chicago, 1000 kw.

Plans have been perfected for the new power station of the Fall River Electric Light Company, Fall River, Mass., and also for the annex to the present Hartwell street station. The new plant will be 118 x 120 feet and 60 feet high. The Hartwell street annex will be 40 x 96 feet and 46 feet high.

McClave, Rimmer & Co., 85 Liberty street, New York, are installing for Mittag & Volgar, at Park Ridge, N. J., a 150 horsepower engine and generator. This is the second installation.

The recent fire at the plant of the Dean Gas Engine & Foundry Company, Newport, Ky., destroyed only a portion of its



foundry, and the company has ample facilities for carrying on its work. It is occupying the old plant of the Addestone Pipe & Foundry Company and has resumed operations in the part of the foundry that was not damaged. The machine and erecting shops were not burned.

#### Foundries.

The Birmingham Boiler Works, Birmingham, Ala., will build a new foundry and also contemplates the erection of a new forge works. Equipment for the foundry has been purchased, but the forging outfit has not been bought.

The Sycamore Foundry Company, Sycamore, Ill., has increased its capital stock from \$30,000 to \$100,000.

The De Soto Foundry & Machine Company, Mansfield, La., has incorporated with a capital stock of \$30,000 to do a general foundry business. A plant is now under construction and will be placed in commission in about 60 days. F. Kavanaugh is president.

The Birmingham Iron Foundry, Derby, Conn., manufacturer of heavy machinery, chilled and sand rolls and rubber machinery, is to erect a large addition to its plant, to be used for foundry and pattern shop purposes. The first floor will be a large foundry cleaning room with tumbling barrels, emery grinders, pickle tanks, &c., and will be provided with a 10-ton traveling crane and several small jib cranes. The second or mezzanine floor will be devoted to the foundry power plant, including blowers and motors, and to the carpenter shop. The third floor will be a pattern shop. An elevator will be installed between the new and the present building, serving both buildings. According to the present plans the building will be of concrete steel, with the front and rear of brick to match the other buildings. The company is not in the market at present for new machinery in connection with the proposed addition.

The Chicago Hardware Foundry Company, North Chicago, Ill., has let contracts for the erection of an addition to its plant, which will be 65 x 100 feet. The foundry equipment for this addition was let to the Whiting Foundry Equipment Company, Harvey, Ill.

The Dallas City, Ill., branch foundry of the Reliable Foundry Company, Quincy, Ill., has purchased the plant of the Gibson Heater Company, Ft. Madison, Iowa, and will increase the number of molders employed from 75 to 100. Gray iron and brass castings will be made, two cupolas being operated, one for stove plate and light machinery castings and the other for structural and heavy machinery castings. The purchasers will also enter into the wood and metal pattern business on a larger scale and equip the machine shop for handling all classes of heavy work in both structural material and machinery. A company will be organized by the new owners to operate this plant, capitalizing at \$45,000 or \$50,000. Some machinery will be purchased, including a second-hand boring mill with single head, capable of swinging at least 48 inches, and a column lathe to swing at least 36 inches and take in 22 feet between centers. It is also possible that three motors will be purchased and other equipment of a miscellaneous character. The officers of the Reliable Foundry Company, whose main offices and foundries are at Quincy, are as follows: Aldo Sommer, president; E. P. Schanz, vice-president; Phil. Schanz, secretary-treasurer, and H. A. Schanz, superintendent.

The National Cast Steel Company, Avonmore, Pa., organized about a year ago, has been absorbed by the Avonmore Cast Steel Company, and steps will be immediately taken to put the large plant in operation. At a recent meeting of the stockholders the following officers of the new company were elected: J. R. Silver of Greenburg, president; John P. Coon of Uniontown, vice-president, and A. Granville of Pittsburgh, treasurer.

Work has started upon the erection of the additions to the Utica Pipe Foundry, Utica, N. Y. The main building will be 115 x 225 feet, which will be used as a foundry, and there will be three other smaller buildings.

#### Bridges and Buildings.

The Dominion Bridge Company, Limited, Montreal, Quebec, has taken the contract at \$250,000 for a steel viaduct about 3000 feet long across Cap Rouge Valley, near Quebec, this being a part of the construction work on the Quebec-La Tuque section of the Grand Trunk Pacific.

The Miller-Collins Company, contracting engineers, New York, has been awarded the contract for the general work, piers, &c., in connection with the new bridge over the Merrimac River at Haverhill, Mass. The contract amounts to about \$250,000.

#### Fires.

The structural department of the Virginia Bridge & Iron Company, Roanoke, Va., was damaged \$8,000 by fire April 11.

The toy and novelty manufactory of Austin & Crau, South Norwalk, Conn., was damaged by fire April 9. The loss is placed at \$10,000.

The machine shop and foundry of the Berres-Gehl Mfg. Company, West Bend, Wis., were damaged by fire April 12. The loss is about \$30,000.

#### Hardware.

Jamestown File Works, Jamestown, N. Y., has recently been incorporated, with a capital stock of \$50,000 and the following officers: David D. Lewis, president; R. U. Taylor, secretary, and Wm. Hjorth, treasurer. The other directors and stockholders are Arthur W. Hjorth and John A. Johnson. Mr. Taylor and the Messrs. Hjorth are associated in the Hjorth Company, maker of wrenches and pliers. Mr. Lewis, the president of the company, was formerly connected with the Logan-Gregg Hardware Company of Pittsburgh. The company recently established a well equipped factory, 12 x 92 feet, two stories high, but this has been found inadequate to the demand and a material enlargement has been decided upon. The files of the company are stamped "Rex Brand."

The Weyburn Company, Rockford, Ill., because of its greatly increased business has found it necessary to increase the capital stock from \$25,000 to \$75,000. The company manufactures steel plow and cultivator shapes, tire shrinkers and benders, disk sharpeners and the Backus iron cutting shear.

The Andrews Wire & Iron Works, Rockford, Ill., has acquired the patents and the right to manufacture the Sanitary sink strainer formerly manufactured by F. H. & E. B. Vrooman, 325 Dearborn street, Chicago. This company will continue to manufacture the strainer in two sizes and finished in vitreous enamel, tinned or japanned. The Andrews Wire & Iron Works manufactures in addition a general line of wire goods and hardware specialties, including calf weaners, jardinières and umbrella stands, window guards, office railings, household wire goods, doll beds, swings, cradles, chairs and stands, elevator inclosures and architectural work.

In addition to its regular product of chains the Diamond Chain & Mfg. Company, Indianapolis, Ind., has recently enlarged its plant for the manufacture of the Diamond I-beam front axle and special automobile parts of all kinds to customers' drawings and specifications.

The Essex Horse Nail Company, Essex, N. Y., whose sole agent is the Livingston Nail Company, 104 Reade street, New York, has modernized its plant by commissioning the General Electric Company, Schenectady, N. Y., to install electric motors, driven by water furnished by a water company in that territory. The entire works have now been operated electrically a sufficient time to convince the management of its unqualified success and at a great saving over steam.

The Rockwood Mfg. Company has been organized at Berwick, Me., to manufacture Tubs, Pails and other Wooden Ware. The president is Paul C. Rockwood, Belmont, Mass., and the treasurer, Herbert F. Rockwood, Ashburnham, Mass. Repairs will have to be made to the plant before it can be occupied, and manufacturing will not begin before June 1.

The Montague City Rod Company, Montague City, Mass., is to erect an addition to its plant, 50 x 80 feet and one story, to be devoted to the manufacture of steel Fishing Rods. The company is to experiment with hollow tube for steel center rods, this type of rod having been manufactured by them for some time, but with solid steel wire. The company states that it will need no new tools or other equipment.

The Simonds File Company, Fitchburg, Mass., is to erect an addition to the hardening room of its new works, 30 x 50 feet, one story with monitor roof.

The Rome Stamping Company has been incorporated at Rome, N. Y., to manufacture household furnishings and metal ware. Capital stock is \$5000. Incorporators are W. L. Kingsley, W. B. Johnson and J. S. Wardwell, Rome, N. Y.

#### Miscellaneous.

The Gardiner Metal Company, Chicago, is erecting a one-story factory at 454-456 West Lake street and will install machinery for the manufacture of stereotype, linotype, monotype, electrotypes and other metals. The present factory of the company is located at 422 West Lake street.

The General Fire Extinguisher Company, Providence, R. I., manufacturer of automatic sprinklers, is to erect an addition to its plant consisting of a two and three story building, 114 x 177 feet. No new tools or other equipment will be required, as the additional space will be used principally for warehouse purposes.

The Worcester Color Company, Worcester, Mass., manufacturer of high grade blues, whose plant was recently greatly damaged by fire, will not rebuild. The machinery and stock have been sold to the Henry Wood's Sons Company, Wellesley, Mass. The Worcester Color Company will go out of existence. It is closely affiliated with the Spencer Wire Company, Worcester, and manufactured dyes from by-products of the Spencer Company's wire mills.

The new factory of the Electric Cable Company, New York, which is now in course of construction at Bridgeport, Conn., will be completed the latter part of April. A reception will be given on the date of its completion to the members of the Bridgeport Board of Trade, to the employees of the company and to the engineers and workmen who were at work on the building. The plant will be devoted to the manufacture of Voltax, the new insulating compound, of magnet wire, rail bonds and field and armature coils. These coils are to be insulated with the Voltax compound, impregnated under a vacuum to insure thorough absorption and to make the product moisture and

water proof. The Electric Cable Company reports an increase of 50 per cent. in the sales of its field and armature coils during February and March over the two preceding months.

The H. W. Johns-Manville Company, through its Philadelphia branch, recently completed two of the season's largest contracts for the installation of its various pipe coverings in the plants of the hotels Marlborough-Blenheim and Denis, Atlantic City, N. J. In the plant of the former all of the hot, salt and fresh water pipes are covered with the "J-M" molded and all steam pipes with the well-known "J-M" 85 per cent. magnesia covering. In the Denis the entire heating system is covered with "J-M" three-ply asbestos air-cell covering, and high pressure work with 85 per cent. magnesia.

The Safety Railway Switch Company has been incorporated at Kenosha, Wis., with a capital stock of \$30,000. The company will build a factory and commence the manufacture of a patent railroad switch for use by steam and electric railroads. The incorporators are Harry Raymond, Edward S. Frendsen and Julius T. Pabst.

The McGuire-Cummings Mfg. Company, manufacturer of railroad equipment, with plants at Chicago and Paris, Ill., has increased its capital stock to \$1,000,000. The company has been established in Chicago for over 20 years, and last year, owing to the need of greater manufacturing and shipping facilities, built a large plant at Paris, Ill. The site of this latter plant consists of 28½ acres of ground and the buildings, 12 in number, of mill construction and equipped with modern machinery throughout. The plant is well situated as regards transportation facilities. The company manufactures a large line of specialties in railroad equipment, the Chicago plant being devoted to the lighter work.

The Railway Tie, Rod & Spike Company, Minneapolis, Minn., has been incorporated with a capital stock of \$500,000. The company will manufacture a new angle spike and tie rod. It has already begun making the tie rod and special machinery will soon be received for manufacturing the spike. Incorporators of the company are E. J. Bricker, Minnie L. Bricker, DeWitt Nelson, Frank Tidball, D. H. Robinson and Archer Allen of Minneapolis, and W. V. Kasper of Owatonna.

The New York Automatic Chemical Fire Extinguisher Company has been incorporated at Binghamton, N. Y., to manufacture a patent automatic fire extinguisher. Capital stock is \$150,000. The directors are C. C. W. Noble, New York; W. F. Liddle, Binghamton, and E. R. Robertson, Syracuse, N. Y.

An addition is being made to the electrical department of the plant of Zucker, Levitt & Loeb, at 526 West Twenty-fifth street, New York. The improvement consists of a one-story building, 25 x 100 feet.

The Truss Steel Tie Company, Pittsburgh, recently placed an order abroad for 50,000 steel ties for delivery to South American ports within as short a time as possible. This foreign purchase by the Pittsburgh company has been made necessary owing to the crowded condition of the mills in this country, and also owing to the high price of material here, which makes it practically prohibitive when seeking to do business with other nations. The ties will be fitted with the company's standard steel tie fastenings.

The Diamond Drill & Supply Company, Somerset, Pa., has incorporated to drill for minerals and to manufacture diamond drill supplies. The company is closely related to the Somerset Pump & Supply Company and the Highland Foundry & Machine Company, the latter soon to be incorporated. E. F. Stahl is president; H. E. Newell, vice-president; M. W. Hauger, treasurer, and W. A. Stahl, secretary and treasurer.

The Benthall Machine Company, Suffolk, Va., has incorporated with a capital stock of \$10,000 to manufacture peanut picking machines. The company will equip a plant, with foundry attached, with the necessary metal and wood working machines, all of which have been purchased. In the construction of the machines the company will need annealed steel, springs and wire cloth. J. T. Benthall is president; C. A. Shoop, secretary, and N. R. Withers, treasurer.

The Novelty Sheet Metal Company, Baltimore, Md., has been incorporated with a capital stock of \$100,000 to manufacture machinery and to utilize sheet metal and scrap tin. The company can be addressed care of John W. Buck, 812 Fidelity Building.

A new tariff on rates of wrought iron pipe in carload shipments from Pittsburgh to several points in the Indian Territory oil fields has been issued, becoming effective April 11. The rate on pipe from Pittsburgh is reduced from 58 to 53 cents per 100 pounds, and from Youngstown the rate is reduced from 56 to 51 cents. The points of destination are Copan, Dewey, Bartlesville, Matoaka, Ochelata and Ramona.

As we go to press the news is received that a considerable part of San Francisco, embracing much of the principal business section of the city, has been destroyed by an earthquake, involving great loss of life. The details

received up to this time are meager, and we can only hope that the calamity is not so great as the early dispatches indicate.

### German Steel Production in 1905.

Statistics, which are spoken of as provisional, have been compiled by the Association of German Iron and Steel Manufacturers covering the production of steel in Germany and Luxemburg in 1905. The distribution between acid and basic processes is given as follows for 1904 and 1905 in metric tons:

	Acid steel.		Basic steel.	
	1905. Tons.	1904. Tons.	1905. Tons.	1904. Tons.
Bessemer ingots.....	424,196	423,742	6,627,902	5,525,429
Open hearth ingots....	165,930	130,546	3,252,520	2,697,760
Steel castings.....	65,369	56,409	186,131	96,405
Totals.....	655,495	610,697	10,066,553	8,319,594

The total for 1905 thus appears to be 10,722,048 tons, against 8,930,291 tons in 1904, an increase of 1,791,757 tons, of which 1,746,959 tons were basic steel. Germany's steel production in 1905 was a trifle over 53 per cent. of that in the United States.

The Crucible Steel Company of America, Pittsburgh, has given a contract to the Pittsburgh Coal Company for its supply of coal for the next year, amounting to about 1,000,000 tons. The price is on a sliding scale basis.

Assuming a steam heating plant with a boiler of 60 per cent. efficiency, using coal of 12,000 British thermal units per pound, each pound of coal will transmit to the water 7200 British thermal units. Since each pound of water takes up 30 British thermal units on its passage 1 pound of coal will heat 240 pounds or 29 gallons of water. This is equivalent to supplying, under extreme conditions of heat loss, 29 square feet of radiation. In condensing low pressure steam gives up approximately its latent heat—966 British thermal units per pound. One boiler horse-power is 34.5 pounds of atmospheric steam or 33,327 British thermal units. Each boiler horse-power will thus require 33,327 ÷ 7200 or 4.63 pounds of coal per hour. Each boiler horse-power will thus furnish 4.63 × 29 or 133 square feet of radiation. As the boilers are usually rated in 100 horse-power sizes this means that a 100 horse-power boiler would supply 13,300 square feet of radiation.

The Newport News Shipbuilding & Dry Dock Company, Newport News, Va., is rushing work on the battle ship Louisiana, and it is now thought that the vessel will be ready for delivery to the Government in from four to six weeks. The battle ship Connecticut, which the Government is building in the Brooklyn Navy Yard in competition with the Louisiana, is expected to lose the race. The latest figures published showed the percentage of completion in the Louisiana to be 97.92 and the Connecticut 97.11. Further, it is stated that the Connecticut will cost \$400,000 more than her sister ship.

Negotiations are in progress looking toward the consolidation of the Star Mfg. Company, manufacturer of skates, bolts, nuts, railroad spikes, iron and steel forgings, &c., the Dartmouth Rolling Mills, Limited, and the Dartmouth Electric Light Company, all at Dartmouth, Nova Scotia. The project is in the initial stage at this time, but there are so many advantages to be obtained in the consolidation that it is likely to go through. If the consolidation is effected a water power which one of the companies owns will be developed and new lines will be taken up.

The offices of the American Can Company, New York, are to be moved at the end of the month from the Bowling Green Building to the company's new building on West Fourteenth street.



## The Iron and Metal Trades

Reports from the leading interest indicate that there has been a more general resumption of buying, the orders booked during the past two weeks having increased considerably, and extending practically over the whole field. Prior to that time, for upward of a month new orders did not equal current deliveries. In fact, there is again some uneasiness now over the possibility of an unmanageable amount of business.

The congestion of the Rail mills is growing more serious and is likely to have its effect upon the general Steel market and indirectly upon the output of the rolling mills. On May 1, the Ohio mill of the Carnegie Steel Company will be turned on Rails for an indefinite period, thus cutting down the supply of Tin Plate and Sheet Bars. Even now, in order to fairly meet the requirements of the independent mills who are supplied with Tin Plate Bars, the United States Steel Corporation has ordered the shutting down of some of its own Tin Plate works.

There have been further sales of Steel Rails for 1906 delivery, among the larger orders being 25,000 tons for the Southern Pacific and 20,000 tons for the New York Central, in addition to former purchases.

The Tennessee Company has opened its books for 1907 at \$29, and has taken 42,000 tons for the Louisville & Nashville, 25,000 tons for another system and has under negotiation about 60,000 tons more.

In the Central West the market is practically bare of Basic and Bessemer Iron for this month, and what moderate quantities are likely to be available beyond that are virtually under option.

In the Chicago district the market is firmer. There have been some fair sales of Foundry and Malleable Bessemer Pig and large contracts for the latter are looked forward to because the Western implement makers are now figuring on their season's requirements for Malleable Castings. A local Chicago Steel interest is in the market for a round block of Basic Pig for the last half.

Cincinnati, as the chief distributing market for Southern Iron, does not report much business, but it reflects in somewhat higher quotations the friendlier attitude of the leading Southern producers to one another.

In the East, New England reports a continuance of the competition between the Buffalo and other districts. The buying of Foundry Pig by the Cast Iron Pipe makers, which was quite liberal, seems to have been concluded. Much of the Iron was placed at slight concessions.

The Eastern Pennsylvania Steel makers have bought additional tonnage, but the price has remained stationary at \$17.90 to \$18 delivered, with an occasional offering at a lower price.

The prospects of an Anthracite Coal strike is having little effect upon the market. It is known that some makers will seize the opportunity to blow out furnaces which were in need of repairs anyhow, and that at least one stack, ready to blow in, will remain idle.

The Structural trade is quieter, notably so far as new buildings are concerned. It is admitted that the strike is having some effect. Among the larger orders placed are 5200 tons of bridge work for the New York & Long Branch Railroad, 4000 tons for the Moodna Creek viaduct of the Erie Road, and 2000 tons for the Utah Copper Company.

It is estimated that the contracts of the Bar mills with the Western implement makers aggregate from 175,000 to 200,000 tons. They were made on the basis of 1.40c., Pittsburgh, with the implement makers exclusively, and that figure has since been withdrawn.

The contract for 25,000 tons of 48-inch Cast Iron Pipe for New York has not yet been awarded.

The inquiries from foreign markets are heavy and pressing, but the works are taking export orders very conservatively, confining themselves to holding their position in the world's markets.

## A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,  
Declines in Italics.

At date, one week, one month and one year previous.

Apr. 18, Apr. 11, Mar. 21, Apr. 19,  
1906. 1906. 1906. 1905.

<b>PIG IRON</b> , Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia .....	<b>\$18.50</b>	\$18.50	\$18.25	\$17.75
Foundry No. 2 Southern, Cincinnati .....	<b>16.75</b>	16.50	16.50	16.25
Foundry No. 2, Local, Chicago ..	<b>18.75</b>	18.75	19.00	17.25
Bessemer, Pittsburgh .....	<b>18.35</b>	18.10	18.35	16.35
Gray Forge, Pittsburgh .....	<b>16.85</b>	16.60	16.35	15.65
Lake Superior Charcoal, Chicago ..	<b>19.50</b>	19.50	19.75	18.50

<b>BILLETS, RAILS, &amp;c.</b> , Per Gross Ton:				
Bessemer Billets, Pittsburgh .....	<b>27.00</b>	27.00	26.50	24.00
Forging Billets, Pittsburgh .....	<b>32.00</b>	32.00	32.00	27.00
Open Hearth Billets, Phila .....	<b>29.00</b>	29.00	29.00	28.00
Wire Rods, Pittsburgh .....	<b>34.00</b>	34.00	34.00	34.00
Steel Rails, Heavy, Eastern Mill ..	<b>28.00</b>	28.00	28.00	28.00

<b>OLD MATERIAL</b> , Per Gross Ton:				
O. Steel Rails, Chicago .....	<b>14.00</b>	13.50	13.50	14.75
O. Steel Rails, Philadelphia .....	<b>17.00</b>	17.00	16.25	18.00
O. Iron Rails, Chicago .....	<b>21.25</b>	20.50	20.50	19.50
O. Iron Rails, Philadelphia .....	<b>21.50</b>	21.50	21.00	24.00
O. Car Wheels, Chicago .....	<b>19.00</b>	19.00	18.00	16.00
O. Car Wheels, Philadelphia .....	<b>16.75</b>	16.75	16.75	17.00
Heavy Steel Scrap, Pittsburgh .....	<b>15.00</b>	14.50	14.50	16.00
Heavy Steel Scrap, Chicago .....	<b>13.50</b>	13.50	13.00	14.50

<b>FINISHED IRON AND STEEL</b> , Per Pound:				
Refined Iron Bars, Philadelphia ..	<b>1.63½</b>	1.63½	1.73½	1.73½
Common Iron Bars, Chicago .....	<b>1.66½</b>	1.66½	1.71½	1.60
Common Iron Bars, Pittsburgh ..	<b>1.55</b>	1.60	1.65	1.65
Steel Bars, Tidewater, New York ..	<b>1.64½</b>	1.64½	1.64½	1.64½
Steel Bars, Pittsburgh .....	<b>1.50</b>	1.50	1.50	1.50
Tank Plates, Tidewater, New York ..	<b>1.74½</b>	1.74½	1.74½	1.74½
Tank Plates, Pittsburgh .....	<b>1.60</b>	1.60	1.60	1.60
Beams, Tidewater, New York .....	<b>1.84½</b>	1.84½	1.84½	1.74½
Beams, Pittsburgh .....	<b>1.70</b>	1.70	1.70	1.60
Angles, Tidewater, New York .....	<b>1.84½</b>	1.84½	1.84½	1.74½
Angles, Pittsburgh .....	<b>1.70</b>	1.70	1.70	1.60
Skelp, Grooved Steel, Pittsburgh ..	<b>1.57½</b>	1.57½	1.57½	1.65
Skelp, Sheared Steel, Pittsburgh ..	<b>1.60</b>	1.60	1.60	1.70

<b>SHEETS, NAILS AND WIRE</b> , Per Pound:				
Sheets, No. 27, Pittsburgh .....	<b>2.25</b>	2.25	2.25	2.30
Wire Nails, Pittsburgh .....	<b>1.85</b>	1.85	1.85	1.80
Cut Nails, Pittsburgh .....	<b>1.80</b>	1.80	1.80	1.80
Barb Wire, Galv., Pittsburgh .....	<b>2.30</b>	2.30	2.30	2.25

<b>METALS</b> , Per Pound:				
Copper, New York .....	<b>18.62½</b>	18.62½	18.62½	15.25
Spelter, St. Louis .....	<b>5.95</b>	5.90	6.12½	5.77½
Lead, New York .....	<b>5.35</b>	5.35	5.35	4.50
Lead, St. Louis .....	<b>5.30</b>	5.25	5.27½	4.47½
Tin, New York .....	<b>38.85</b>	38.55	37.12½	30.40
Antimony, Hallett, New York .....	<b>20.00</b>	19.50	16.50	8.25
Nickel, New York .....	<b>40.00</b>	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York .....	<b>\$3.70</b>	\$3.79	\$3.69	\$3.74

## Chicago.

FISHER BUILDING, April 18, 1906.—(By Telegraph.)

Contracts for approximately 200,000 tons of Steel Bars for delivery during the ensuing 12 months were placed by Western implement manufacturers during the closing days of last week. The basis on which this tonnage was closed is reliably reported to have been at a concession of \$2 a ton, or 1.40c., Pittsburgh, equivalent to 1.56½c., Chicago. This price was held open to the implement trade exclusively until April 15, and has since been withdrawn, and the market is again firmly established on the basis of 1.50c., Pittsburgh. Concessions to this trade are not without precedent, however, inasmuch as contracts now expiring averaged 1.40c. Notwithstanding the greatly strengthened condition of the Iron and Steel trade as compared with the market a year ago, the implement manufacturers insisted on a continuation of the former basis. The closing of this tonnage has removed one of the disturbing factors from the finished market, and large contracts for Agricultural Shapes for the ensuing year's requirements are now under consideration. The purchase of Malleable Castings will also be proceeded with, and the buying of Pig Iron for last half delivery by this trade will naturally follow. General conditions in the Iron and Steel trade in the West are better than at any time since the first of the year, and with the output of the mills in the heavier lines covered well through the second half of the year any curtailment of consumption in the lighter lines will not affect conditions very materially. The specifications for the first buildings to be erected at Gary, Ind., where the new Steel plant of the Illinois Steel Company will be built, are now in the hands of the American Bridge Company and ground will be broken shortly. These structures include a machine shop, foundry and pattern shop, and

approximately 1200 tons of Steel will be required in their erection. Other Structural contracts placed during the week aggregate about 4000 tons. A decidedly firmer tone pervades the Pig Iron market, and the total tonnage placed by Western foundries easily aggregates 15,000 tons for the week. The largest contracts include 5000 tons for a Pipe works and 3000 tons of Malleable Bessemer for second half delivery to a Malleable foundry. Western Steel works have made inquiries for Basic for delivery the last half of the year, and the prospective purchases of one will range from 10,000 to 20,000 tons, according to the price that can be secured. The Old Material market shows no further decline, but the strengthening of a few lines in spite of the disposal of 15,000 tons of Scrap last week by Western roads.

**Pig Iron.**—Western consumers are now beginning to contract freely for second half delivery, and although the bulk of the business placed was in lots of less than 1000 tons, the week's total was almost equal to that of the week preceding. The inquiry for Malleable Bessemer is heavy, although only one contract of note has yet been closed, amounting to 3000 tons, placed on the basis of \$18.80, Chicago. A local Pipe foundry purchased 5000 tons of Northern and Southern Forge and Foundry, and one Steel interest is in the market for 10,000 to 20,000 tons of Basic, for last half delivery. Southern furnaces are now quoting Basic at \$14.50, Birmingham, which is 50 cents above No. 2, this advance being due to the present scarcity of this grade. Furnaces further East that have been running low prices in this market for both Malleable Bessemer and Foundry Iron have withdrawn quotations because of the recent heavy sales that were made in the Pittsburgh district, and the market on local grades is consequently stronger. The leading Southern interests are firmly maintaining a basis of \$14, Birmingham, for No. 2, but this is still being shaded 15 to 25 cents a ton by a few of the small furnaces. The new Charcoal Iron furnace of the Mitchell-Diggins Iron Company, Cadillac, Mich., has been placed in operation. It has an estimated capacity of 40,000 tons of Malleable Car Wheel and Foundry Iron. Prevailing quotations, f.o.b. Chicago, are as follows:

Lake Superior Charcoal.....	\$19.50 to \$20.00
Northern Coke Foundry, No. 1.....	19.25 to 19.50
Northern Coke Foundry, No. 2.....	18.75 to 19.00
Northern Coke Foundry, No. 3.....	18.25 to 18.50
Northern Scotch, No. 1.....	19.80 to 20.00
Ohio Strong Softeners, No. 1.....	19.80 to 20.05
Ohio Strong Softeners, No. 2.....	19.30 to 19.55
Southern Coke, No. 1.....	18.25 to 18.40
Southern Coke, No. 2.....	17.65 to 17.90
Southern Coke, No. 3.....	17.15 to 17.40
Southern Coke, No. 4.....	16.65 to 16.90
Southern Coke, No. 1 Soft.....	18.15 to 18.40
Southern Coke, No. 2 Soft.....	17.65 to 17.90
Southern Gray Forge and Mottled.....	16.15 to 16.40
Malleable Bessemer.....	18.80 to 19.25
Standard Bessemer.....	19.30 to 19.55
Jackson Co. and Kentucky Silvery, 6 %.....	20.30
Jackson Co. and Kentucky Silvery, 8 %.....	21.30 to 23.30
Jackson Co. and Kentucky Silvery, 10 %.....	23.30

**Metals.**—A heavy buying movement is on in Copper and quotations are strong at the prices named below. In Tin the good demand and low supplies and the speculative influences at work have added strength to this material and prices are again advanced  $\frac{1}{4}$ c., with the prospect that the top is not yet. Lead also is in better demand and in some cases 1c. per 100 lbs. better is done. We quote: Casting Copper, 18 $\frac{1}{2}$ c. to 18 $\frac{3}{4}$ c.; Lake, 18 $\frac{1}{2}$ c. to 17 $\frac{3}{4}$ c., in car lots; small lots,  $\frac{1}{4}$ c. to  $\frac{3}{4}$ c. higher; Pig Tin, car lots, 40c. to 40 $\frac{1}{2}$ c.; small lots, 40 $\frac{1}{2}$ c. to 41c.; Spelter, prompt delivery, 6.20c. to 6.35c., for car lots; Lead, Desilverized, 5.45c. to 5.70c., for 50-ton lots; Corroding, 6c. to 6.25c., for 50-ton lots; on car lots, 2 $\frac{1}{4}$ c. per 100 lbs. higher; Sheet Zinc is \$7.75 list, f.o.b. Laselle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 16c.; Heavy Copper, 15 $\frac{1}{4}$ c.; Copper Bottoms, 15c.; Copper Clips, 15 $\frac{1}{2}$ c.; Red Brass, 15 $\frac{1}{4}$ c.; Red Brass Borings, 13c.; Yellow Brass, Heavy, 12c.; Yellow Brass Borings, 10c.; Light Brass, 8 $\frac{3}{4}$ c.; Lead Pipe, 4 $\frac{1}{2}$ c.; Tea Lead, 4 $\frac{1}{2}$ c.; Zinc, 4 $\frac{1}{2}$ c.; Pewter, No. 1, 24c.; Tin Foil, 29c.; Block Tin Pipe, 27 $\frac{1}{2}$ c.

(By Mail.)

**Billets and Rods.**—The Illinois Steel Company now has four of its new Open Hearth furnaces in operation, and but for the heavy demands of its new Structural mill would have sufficient Steel to meet the requirements of its other finishing departments. Sales of Forging Billets in this market have been comparatively few and high prices continue to prevail. For prompt delivery they continue to be quoted at from \$35 to \$36, f.o.b. Chicago. Both Bessemer and Open Hearth Rods are scarce, and few transactions have been recorded at the advanced price of \$34, Pittsburgh, equivalent to \$37, Chicago.

**Rails and Track Materials.**—The Lackawanna Steel Company was awarded the contract for 3000 tons of Rails by the Boise Valley Railroad Company. This tonnage has been under negotiation for some time, and this award was delayed, as satisfactory deliveries could not be promised by most of the mills. The Illinois Steel Company has not booked any tonnage of Standard Sections, and no additional contracts will be taken until prices on next year's delivery

are announced. On account of the closing down of the Illinois Coal mines there is little demand for Light Rails, although the tonnage now on the books will carry the mills well through July. Quotations are unchanged, as follows: Angle Bars, accompanying Rail orders, 1906 delivery, 1.50c.; carload lots, 1.75c.; Spikes, 2.15c. to 2.25c.; Track Bolts, 2.65c. to 2.75c., base, Square Nuts, and 2.80c. to 2.90c., base, Hexagon Nuts. The store prices on Track Supplies range from 15c. to 20c. above mill prices. Light Rails, 30 to 45 lb. sections, \$27 to \$28; 25-lb., \$29; 20-lb., \$29 to \$30; 16-lb., \$30 to \$31; 12-lb., \$31 to \$32, and lighter sections down to 8-lb., \$38 to \$40, f.o.b. mill. Standard Sections are unchanged, at \$28, f.o.b. mill, full freight to destination.

**Structural Material.**—The American Bridge Company has received plans for the first buildings to be erected at Gary, Ind., for the Illinois Steel Company. These consist of a large machine shop, pattern shop and foundry, and will require about 1200 tons of Steel. The Minneapolis Steel & Machinery Company was awarded contract for 2000 tons to be used in the erection of the new plant of the Utah Copper Company, Salt Lake City. The buildings for this plant involve approximately 7000 tons of material and the contracts for the same are being awarded in sections. At Lonsdale, Tenn., the Steel for the new machine shop of the Southern Railway went to the American Bridge Company. Other contracts for the week include 1200 tons for the Mentor Building, this city, to the Hansell-Elcock Company, and 350 tons for an office building at Rockford, Ill., to Holmes, Pyott & Co. The new Structural mill at South Chicago during the month of March rolled approximately 16,000 tons of assorted Shapes, and it is believed that ultimately the output can be increased to 25,000 tons a month. The pressure on the Carnegie mills is being greatly relieved by the transfer of tonnage for Western delivery, specifications for 30,000 tons having been given the Illinois Steel Company this week by the Carnegie Steel Company for rolling the next two months. The demand for material for prompt delivery continues fair and quotations are uniformly on the basis of 2.25c. Mill quotations remain unchanged, as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.86 $\frac{1}{2}$ c.; Angles, 3 to 6 inches,  $\frac{1}{4}$ -inch and heavier, 1.86 $\frac{1}{2}$ c.; Angles, larger than 6 inches on one or both legs, 1.96 $\frac{1}{2}$ c.; Beams, larger than 15 inches, 1.96 $\frac{1}{2}$ c.; Zees, 3 inches and over, 1.86 $\frac{1}{2}$ c.; Tees, 3 inches and over, 1.91 $\frac{1}{2}$ c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending or other shop work.

**Plates.**—The new 24-inch universal Plate mill which the Cambria Steel Company has under erection at Johnstown, Pa., will not be placed in operation until about June 1. Specifications are being received by the mills very freely, although deliveries can still be made in from two to three weeks on new tonnage. Quotations are held firmly as follows: Tank quality,  $\frac{1}{4}$ -inch and heavier, wider than 6 $\frac{1}{4}$  and up to 100 inches wide, inclusive, car lots, Chicago, 1.76 $\frac{1}{2}$ c.; 3-16-inch, 1.86 $\frac{1}{2}$ c.; Nos. 7 and 8 gauge, 1.91 $\frac{1}{2}$ c.; No. 9, 2.01 $\frac{1}{2}$ c.; Flange quality, in widths up to 100 inches, 1.86 $\frac{1}{2}$ c., base, for  $\frac{1}{4}$ -inch and heavier, with the same advances for lighter weights; Sketch Plates, Tank quality, 1.86 $\frac{1}{2}$ c.; Flange quality, 1.96 $\frac{1}{2}$ c. Store prices on Plates are as follows: Tank Plate,  $\frac{1}{4}$ -inch and heavier, up to 72 inches wide, 2c. to 2.10c.; from 72 to 96 inches wide, 2.10c. to 2.20c.; 3-16 inch up to 60 inches wide, 2.10c. to 2.20c.; 72 inches wide, 2.35c. to 2.45c.; No. 8 up to 60 inches wide, 2.15c. to 2.25c.; Flange and Head quality, 25c. extra.

**Sheets.**—Galvanized Sheets are now ruling firmer than for some time, which is to a large extent due to the high prices prevailing for Spelter. Concessions on the lighter gauges of Black Sheets are not heard of so frequently, and as most of the speculative tonnage has been absorbed the market generally is in a stronger condition. Quotations are fairly well maintained on the following basis: Blue Annealed, Nos. 9 and 10, 1.86 $\frac{1}{2}$ c. to 1.91 $\frac{1}{2}$ c.; Nos. 16 and 17, 2.06 $\frac{1}{2}$ c. to 2.11 $\frac{1}{2}$ c.; Box Annealed, Nos. 18 to 20, 2.26 $\frac{1}{2}$ c. to 2.31 $\frac{1}{2}$ c.; No. 27, 2.46 $\frac{1}{2}$ c. to 2.51 $\frac{1}{2}$ c.; No. 28, 2.56 $\frac{1}{2}$ c. to 2.61 $\frac{1}{2}$ c.; Galvanized Sheets, Nos. 10 to 14, 2.61 $\frac{1}{2}$ c.; Nos. 17 to 21, 2.86 $\frac{1}{2}$ c.; Nos. 22 to 24, 3.01 $\frac{1}{2}$ c.; Nos. 25 and 26, 3.21 $\frac{1}{2}$ c.; No. 27, 3.41 $\frac{1}{2}$ c.; No. 28, 3.61 $\frac{1}{2}$ c.; No. 30, 4.11 $\frac{1}{2}$ c. Sheets from store: Blue Annealed, Nos. 10 and 11, 2.10c. to 2.20c.; Nos. 12 and 13, 2.15c. to 2.25c.; Nos. 14 and 15, 2.20c. to 2.30c.; No. 16, 2.30c. to 2.40c. Box Annealed, Nos. 18 to 20, 2.50c. to 2.55c.; Nos. 22 to 24, 2.55c. to 2.60c.; No. 26, 2.60c. to 2.65c.; No. 27, 2.65c. to 2.70c.; No. 28, 2.75c. to 2.80c.; No. 30, 3.15c. to 3.20c. Galvanized from store: Nos. 10 to 20, 3c. to 3.95c.; Nos. 22 to 24, 3.15c. to 3.20c.; No. 26, 3.35c. to 3.40c.; No. 27, 3.55c. to 3.60c.; No. 28, 3.75c. to 3.80c.; No. 30, 4.95c. to 5c.

**Bars.**—Practically the entire Steel Bar tonnage of Western implement makers was placed with the mills during the closing days of last week. Estimates of the total business placed range from 175,000 to 200,000 tons, deliveries to extend over a period of 12 months. It is reliably stated that a concession of \$2 a ton was granted this trade, providing contracts would be placed prior to April 15, and this accounts for the large contracts closed during the last three days of



the week. The basis of 1.40c., Pittsburgh, has now been withdrawn and the market is again firmly reestablished at 1.50c. This concession was limited entirely to implement makers, and other consumers, regardless of the tonnage they desired to place, were quoted 1.50c. Iron Bars continue to be firmly held on the same basis as Steel Bars and consumers are buying more freely than at any time during the past two months. We quote as follows: Iron Bars, 1.66½c.; Steel Bars, 1.66½c., both half extras; Hoops, 2.06½c., extras as per Hoop card; Bands, 1.66½c., as per Steel card; Soft Steel Angles and Shapes, 1.66½c., half extras. Store prices are as follows: Bar Iron, 2.10c.; Steel Bars, 1.85c., and as high as 2c. is asked on certain scarce sizes; Steel Bands, 1.85c. to 1.90c., half extras; Soft Steel Hoops, 2.30c. to 2.40c., full extras.

**Merchant Pipe.**—While the demand for Merchant Pipe shows signs of improvement, the tonnage that is going to the mills is not nearly as great as during the months of January and February. Most of the large jobbers who loaded up at that time are still carrying large stocks and no buying of any consequence will be done until they have been moved. Mill quotations are unchanged, on the basis of 81 per cent. off the list, Pittsburgh, although official discounts on car lots, Chicago, remain as follows: Black Steel Pipe, 78.35 per cent. on the base sizes, ¾ to 6 inches, and Galvanized, 68.35 per cent. Iron Pipe is quoted from 1½ to 2 points higher. From store in small lots Chicago jobbers are quoting 76½ to 77 per cent. on Black Steel Pipe, ¾ to 6 inches.

**Boiler Tubes.**—While very little new business is being placed, heavy specifications are being received by the mills and concessions have been almost entirely withdrawn. Official discounts, base sizes, in car lots, are as follows: Steel Tubes, 62.35; Iron, 51.35; Seamless, 50.35; 2½-inch and smaller and lengths over 18 feet, and 2½-inch and lengths over 22 feet, 10 per cent. extra. Store prices are unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to 1½ inches.....	40	35	42½
1¾ to 2¼ inches.....	50	35	35
2½ inches.....	52½	35	30
2¾ to 5 inches.....	60	47½	42½
6 inches and larger.....	50	35	..

**Merchant Steel.**—At a meeting of the Shafting Association held here last Thursday prevailing quotations were reaffirmed. This organization is now on a better basis than at any time since the first of the year, and it is believed that prices will hereafter be well maintained. Since the implement makers have contracted for their Steel requirements for the ensuing year, they are beginning to consider contracts on Agricultural Shapes, and negotiations are now under way for the placing of a considerable tonnage. Quotations remain unchanged as follows: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish up to 1½ x ½ inch, 1.65c., and Iron Finish, 1½ x ½ inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: ¾, ¾ and 1 inch, 2c., and 1¼ inch and larger, 1.90c.; Pittsburgh; Smooth Finished Machinery Steel, 1.91½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, 1.86½c.; Cutter Shoe, 2.40c.; Toe Calk Steel, 2.21½c.; Railway Spring, 1.86½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting, 50 per cent. discount on car lots and 45 per cent. in less than car lots, in base territory.

**Cast Iron Pipe.**—The West is not offering anything of importance in the way of municipal contracts for Cast Iron Pipe, and the contracts closed during the week were largely for small lots. Quotations, however, remain firm and unchanged, as follows: Water Pipe, 4-inch \$31; 6, 8, 10 and 12 inch, \$30; over 12-inch, \$29, with \$1 extra for Gas Pipe. Large municipal contracts are usually placed at somewhat lower basis.

**Coke.**—No advances in prices have been recorded during the week and, if anything, the market is easier, notwithstanding the Coal strike. Most of the Western foundries accumulated stocks early in the year and are not buying heavily at the present time. Seventy-two-hour Connellsville Foundry Coke is held at \$3 to \$3.15, at the ovens, and By-Product Coke continues to be quoted at \$5.80, Chicago. The freight from Connellsville to Chicago is \$2.65.

**Old Material.**—The heavy offerings of Western roads were readily absorbed last week without affecting the market materially. Most of the tonnage was taken by dealers at prevailing quotations. They are again accumulating stocks, believing that for the present at least the point of the market has been reached. Two thousand tons of Rerolling Rails sold by the Illinois Central Railroad were disposed of on the basis of \$15.75, and were immediately resold, according to reports, at \$16.25. The total tonnage disposed of aggregated 15,000 tons, and it was generally believed that the market would suffer a sharp decline. Outside of a few Steel works and Steel foundries consumers are not buying freely, Iron mills being well supplied until about the middle of the year. The range of prices paid by large consumers to producers and dealers, per gross ton, car lots, f.o.b. Chicago, is as follows:

Old Iron Rails.....	\$21.25 to \$21.50
Old Steel Rails, 4 feet and over.....	16.00 to 16.50
Old Steel Rails, less than 4 feet.....	14.00 to 14.50
Heavy Relaying Rails, subject to inspection, 50 pounds and under.....	27.00 to 27.50
Old Car Wheels.....	19.00 to 19.50
Heavy Melting Steel Scrap.....	13.50 to 14.00
Frogs, Switches and Guards.....	13.50 to 14.00
Mixed Steel.....	12.00 to 12.50

The following quotations are per net ton:

Iron Fish Plates.....	\$16.50 to \$17.00
Iron Car Axles.....	22.50 to 23.00
Steel Car Axles.....	18.00 to 18.50
No. 1 Railroad Wrought.....	14.50 to 15.00
No. 2 Railroad Wrought.....	13.50 to 14.00
Locomotive Tires, smooth.....	14.00 to 14.50
Railway Springs.....	13.50 to 14.00
No. 1 Dealers' Forge.....	12.00 to 12.50
Mixed Bushing.....	10.00 to 10.50
Iron Axle Turnings.....	11.00 to 11.50
Soft Steel Axle Turnings.....	11.00 to 11.50
Machine Shop Turnings.....	11.00 to 11.50
Cast Borings.....	8.50 to 9.00
Mixed Borings, &c.....	8.50 to 9.00
No. 1 Mill.....	8.50 to 9.00
No. 2 Mill.....	7.50 to 8.00
No. 1 Boilers, cut to Sheets and Rings.....	9.50 to 10.00
No. 1 Cast Scrap.....	13.00 to 13.25
Stove Plate and Light Cast Scrap.....	10.50 to 11.00
Railroad Malleable.....	13.50 to 14.00
Agricultural Malleable.....	12.50 to 13.00

## Pittsburgh.

PARK BUILDING, April 18, 1906.—(By Telegraph.)

**Pig Iron.**—We note a continued active inquiry for Bessemer and Basic Iron, and it is understood that three of the large Steel concerns are in the market as purchasers for May and June delivery. The supply of Bessemer for delivery prior to July 1 is very limited and is held principally by the Bessemer Pig Iron Association, which is reported to have something over 30,000 tons for May and June shipment, practically all of which will be taken by the Steel Corporation. We quote Bessemer Iron at \$17.50 to \$17.75 and Basic at \$17, Valley furnace. Consumers of Foundry Iron are specifying liberally on contracts and are taking in their Iron as fast as the furnaces can ship it. Prices of Foundry Iron, however, are not very strong and we quote Northern brands of No. 2 Foundry at \$16.50 at furnace for good sized lots and up to \$17 for small lots. There is not much inquiry for Forge Iron, but prices for Northern grades are fairly strong on the basis of \$16 at furnace or \$16.85, Pittsburgh.

**Steel.**—A continued shortage is reported in the supply of both Bessemer and Open Hearth Steel and deliveries from the mills are still very unsatisfactory. The shortage in supply of Steel will be relieved toward August or September by the starting up of the new Bessemer Steel plant of the Youngstown Sheet & Tube Company, which is expected to start about August 1 or before. We quote Bessemer Billets at \$27 and Open Hearth \$28, Pittsburgh; Open Hearth Sheet and Tin Bars, \$28, Pittsburgh, for random lengths, and Cut Bars, 50c. a ton extra. We note that these prices are shaded 50c. to \$1 per ton by outside producers. Forging Billets are held at about \$32, Pittsburgh.

(By Mail.)

The general market is better in every way than a month ago. The demand for Rails and Structural Steel continues enormously heavy and the mills are filled for practically all of this year. We note an active inquiry for Bessemer and Basic Pig Iron, with the supply of Bessemer for delivery up to July 1 very limited. In fact, about the only Bessemer Iron that can be had for May and June delivery is that held by the Bessemer Pig Iron Association, amounting to between 30,000 and 40,000 tons. All this Iron is practically certain to go to the United States Steel Corporation, which already has a virtual option on it. For some time there has been a decided scarcity in Bessemer Ores, which has led to a shortage in the supply of Bessemer Iron, but it will be relieved when the first cargoes of Bessemer Ores come down the lakes, which will probably be prior to May 10. Prices of Bessemer Iron are very firm, at \$17.50 to \$17.75 at Valley furnace. We can state that several independent Valley furnaces have been offered \$17.25 at furnace for all their Bessemer Iron for the balance of this year delivery and have declined it. Basic Iron is quite firm at \$17 at Valley furnace, and the demand is fairly active. Foundry Iron continues rather weak, Northern brands being freely offered at \$16.50, Valley furnace, for No. 2, and on a firm offer for any considerable tonnage some furnaces would probably shade this price. There is not much inquiry for Forge Iron, consumers being pretty well covered, but prices are a little firmer, Northern brands of Forge being held at \$16 to \$16.15, Valley furnace, or \$16.85 to \$17, Pittsburgh. There is not much inquiry for Steel, but the mills are still very much behind in delivery. Bessemer Billets are held at about \$27

and Open Hearth at \$28, maker's mill. It is probable that one or two outside mills might shade these prices about 50c. a ton. The Scrap market is firmer, in sympathy with Pig Iron, and the demand is better. Coke has quieted down and prices are a little softer, due to the fact that there will be no Coal strike in this district. In Finished Iron and Steel the demand in some lines is showing betterment, particularly in Wire products, for which the mills are entering more tonnage than for some time. The demand for Tin Plate and Sheets is only fair, and we understand that the advanced price on Tin Plate is being shaded. Pipe is in fair demand, but prices continue very low.

**Ferromanganese.**—Prices continue to depend altogether on how pressing are the buyer's needs, and we quote 80 per cent. prompt Ferro at \$115 to \$125, Pittsburgh. For May and June delivery about \$95 is quoted. There is no inquiry in the market for the last half of the year, consumers being willing to wait and take chances on lower prices when they are ready to buy.

**Muck Bar.**—There is very little inquiry except for Muck Bar made from Scrap, which is held at about \$26 to \$26.50, Pittsburgh. For Muck Bar made from all Pig Iron \$29 to \$29.50, Pittsburgh, is quoted.

**Steel Rails.**—The tonnage being placed in Rails is simply enormous, and the mills are being swamped with business. In the past week the Carnegie Steel Company took over 50,000 tons, among which were 9500 tons for the Pittsburgh, Butler, Harmony & New Castle traction line, 25,000 tons for the Southern Pacific, 4500 tons for the Toledo & Ohio Central, 7000 tons for the Spokane Inland traction line and 6000 tons for the Northern Electric traction line. The Carnegie Steel Company is turning out nearly 4000 tons of Rails per day of all sections at its Youngstown and Edgar Thomson works. We quote Standard Sections at \$28, at mill. We quote Light Rails as follows: 8-lb., \$36; 10-lb., \$32; 12-lb., \$30; 16-lb., \$29; 20-lb., \$28.50; 25 to 45 lb., \$27.50 to \$28, maker's mill.

**Rods.**—We continue to quote Bessemer and Open Hearth Rods at \$34 and Chain Rods \$35, Pittsburgh. There is a fair amount of inquiry.

**Skelp.**—Not much new business is being placed, but the mills are quite busy on contracts. We quote: Grooved Steel Skelp, 1.57½c. to 1.60c.; Sheared Steel Skelp, 1.60c. to 1.65c.; Grooved Iron Skelp, 1.65c. to 1.70c.; Sheared Iron Skelp, 1.75c. to 1.80c., Pittsburgh, these prices being for ordinary widths and gauges.

**Structural Material.**—A good deal of new business has been placed and there is an enormous amount of business in sight. The American Bridge Company has taken 5500 tons of bridge work for the Cincinnati, New Orleans & Texas Pacific, while the McClintic-Marshall Construction Company has taken 1000 tons for an extension to the Open Hearth Steel works building of the New York State Steel Company, Buffalo, and 1000 tons for an extension to the Boston Elevated track sheds. Work in sight includes the widening of the Pittsburgh & Lake Erie bridge at Beaver, Pa., which will take about 4500 tons. Some of the Structural companies have their books so well filled that they are not really anxious to take on more, especially for early delivery. Some good records for output have been made in the new Structural mill of the Jones & Laughlin Steel Company, which is now in full operation. Deliveries from the mills are fairly satisfactory, but they are still somewhat behind on shipment. We quote: Beams and Channels, up to 15-inch, 1.70c.; over 15-inch, 1.80c.; Angles, 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.75c.; 8 x 8 and 7 x 3½ inches, 1.80c.; Zees, 3-inch and larger, 1.70c.; Tees, 3-inch and larger, 1.75c. Under the Steel Bar card Angles, Channels and Tees under 3-inch are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

**Plates.**—Consumers are specifying freely on contracts and the new tonnage being entered is perhaps a little heavier than it was two or three weeks ago. However, there is little trouble in getting reasonably prompt deliveries on Plates, as some of the smaller mills have not much work ahead of them. There is still some shading in official prices of about \$1 a ton on narrow Plates. We quote Tank Plates, ¼-inch thick, 6¼ up to 100 inches in width, 1.60c., base, at mills, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than ¼-inch to and including 3-16-	
inch Plates on thin edge.....	\$0.10
Gauges Nos. 7 and 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 inches.....	.05
Plates over 110 to 115 inches.....	.10
Plates over 115 to 120 inches.....	.15
Plates over 120 to 125 inches.....	.25
Plates over 125 to 130 inches.....	.50
Plates over 130 inches.....	1.00
All sketches (excepting straight taper Plates vary-	
ing not more than 4 inches in width at ends,	
narrowest end being not less than 30 inches)....	.10
Complete Circles.....	.20
Roller and Flange Steel Plates.....	.10
"A. B. M. A." and ordinary Fire Box Steel Plates	.20

Still Bottom Steel..... .30  
Marine Steel..... .40

Shell Grade of Steel is abandoned.

**TERMS.**—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ½ of 1 per cent. is allowable. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

**Sheets.**—A fair amount of new business is being placed, but the mills are working mostly on contracts taken some time ago at lower prices than are ruling now. Jobbers who have large stocks are shading prices as much as \$2 a ton on both Black and Galvanized, and on the lighter gauges some of the mills are shading prices very materially, especially on Black Sheets. Deliveries of Sheet Bars to the mills are still reported to be unsatisfactory. We quote: Black Sheets, Box Annealed, one pass through cold rolls, Nos. 10 to 12 gauge, 1.95c. to 2c.; Nos. 13 and 14, 2c. to 2.05c.; Nos. 15 and 16, 2.05c. to 2.10c.; Nos. 17 to 21, 2.10c. to 2.15c.; Nos. 22 to 24, 2.15c. to 2.20c.; Nos. 25 and 26, 2.20c. to 2.25c.; No. 27, 2.25c. to 2.30c.; No. 28, 2.35c. to 2.40c.; No. 29, 2.50c. to 2.55c., and No. 30, 2.60c. to 2.65c. We quote Galvanized Sheets as follows: Nos. 10 and 11, 2.30c. to 2.35c.; Nos. 12 to 14, 2.40c. to 2.45c.; Nos. 15 and 16, 2.50c. to 2.55c.; Nos. 17 to 21, 2.65c. to 2.70c.; Nos. 22 to 24, 2.80c. to 2.85c.; Nos. 25 and 26, 3c. to 3.05c.; No. 27, 3.20c. to 3.25c.; No. 28, 3.40c. to 3.45c.; No. 29, 3.65c. to 3.70c., and No. 30, 3.90c. to 3.95c. We quote No. 28 Gauge Painted Roofing Sheets at \$1.60 to \$1.65 per square, and Galvanized Roofing Sheets, No. 28 gauge, at \$2.95 to \$3 per square for 2-inch corrugations. These prices are for carload lots, jobbers charging the usual advances for small lots from store.

**Iron and Steel Bars.**—It is understood that the implement trade and other large consumers placed some heavy season contracts for Steel Bars prior to April 14, in accordance with their agreement with the mills. A moderate tonnage in Iron Bars is being placed and the mills making Iron and Steel Bars are pretty comfortably filled with business for the next several months. We quote Iron Bars at 1.55c. to 1.60c., Pittsburgh; in carload lots, and Steel Bars, 1.50c., base, half extras, for carloads and larger lots.

**Hoops and Bands.**—Very little new business is being placed, but specifications on old contracts made when prices were lower than they are now are coming in quite freely. The mills have taken a very heavy tonnage in Cotton Ties for this season delivery at the fixed price of 85c. per bundle. We quote Steel Hoops at 1.90c., and Bands for all purposes at 1.50c., base, half extras, as per Standard Steel card. These prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery, an advance of \$2 a ton being charged for less than carloads.

**Tin Plate.**—Some large inquiries for Tin Plate from the canning trade are in the market for fall delivery. We understand that the new price of \$3.55 per base box, which went into effect on April 9, is being shaded. The mills are pretty well filled to July 1, but at lower prices than are ruling now. We quote Tin Plate at \$3.60 per base box, f.o.b. Pittsburgh, for 14 x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in ten days, on which price a rebate of 5c. a box is allowed for carloads and larger lots.

**Merchant Steel.**—The makers of Agricultural Shapes placed some heavy season contracts in the last week. A fair amount of business is coming in, but the mills are steadily catching up on deliveries. Prices are being shaded to some extent, and we understand that official discounts on Shafting are not being held, especially by jobbers. We quote: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish up to 1½ x ½ inch, 1.65c., and Iron Finish, 1½ x ½ inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: ¾, ¾ and 1 inch, 2c., and 1½-inch and larger, 1.90c.; Toe Calk Steel, 2c. to 2.05c.; Railway Spring Steel, 1.75c. to 1.80c.; Cutter Shoes, 2.20c. to 2.25c.; Flat Sleigh Shoe, 1.50c. to 1.55c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades. We quote Cold Rolled Shafting at 50 per cent. discount in carloads and 45 per cent. in less than carloads, delivered in base territory.

**Railroad Spikes.**—The mills are getting a fair amount of new business and the market is firm. We quote \$2 to \$2.05 per 100 lbs.

**Spelter.**—The demand is dull and prices are easier. We quote prime grades of Western Spelter at 5.85c., St. Louis, equal to 5.97½c., Pittsburgh.

**Merchant Pipe.**—No contracts for Line Pipe have been placed since our last report, but inquiries are in the market for considerable tonnage. The demand for Merchant Pipe is quite active and the mills are well fixed with business. Prices continue low, the extreme discount on Merchant sizes of Steel Pipe being 81 per cent. off to the large trade. Official discounts, which are shaded one point to the large trade, are as follows:



## Merchant Pipe.

	Jobbers, carloads.		Iron.	
	Black.	Galv.	Black.	Galv.
1/4 and 1/2 inch.....	72	56	69	53
3/4 inch.....	74	60	71	57
1 inch.....	76	64	73	61
1 1/4 to 3 inches.....	80	70	77 1/2	67 1/2
7 to 12 inches.....	75	60	72 1/2	57
Extra strong, plain ends:				
1/4 to 3/4 inch.....	65	53	62	50
1/2 to 4 inches.....	72	60	69	57
4 1/2 to 8 inches.....	68	56	65	53
Double extra strong, plain ends:				
1/2 to 8 inches.....	61	50	58	47

**Boiler Tubes.**—We note a continued heavy demand for Locomotive Tubes, on which prices are firm, but for Merchant Tubes the demand is dull and prices are being shaded. Discounts are as follows:

## Boiler Tubes.

	Iron.	Steel.
1 to 1 1/2 inches.....	41	46
1 1/2 to 2 1/4 inches.....	41	58
2 1/4 inches.....	46	60
2 3/4 to 5 inches.....	53	66
6 to 13 inches.....	41	58

**Iron and Steel Scrap.**—In sympathy with the market on Steel making Pig Irons, prices on Scrap are firmer and the demand is better. Dealers have advanced their prices on nearly all kinds of Scrap and now quote: Heavy Melting Scrap, \$15 to \$15.25; Bundled Sheet Scrap, \$14.75 to \$15; Machinery Cast Scrap, \$14.75 to \$15; Old Steel Rails, short pieces, \$15 to \$15.25; long pieces, for rerolling, \$15.75 to \$16; Cast Iron Borings, \$8.25 to \$8.50; Old Car Wheels, \$17.25 to \$17.50; Old Iron Axles, \$24.50 to \$25; Old Steel Axles, \$19.50 to \$20, and Wrought Turnings, \$12.50 to \$13, all in gross tons, f.o.b. Pittsburgh.

**Coke.**—The demand for Coke has abated and prices are slightly easier. Last week the best grades of Connellsville Furnace Coke sold as high as \$2.75 a ton at oven, but this week the same grades are offered at \$2.50 a ton at oven. The best grades of Connellsville 72-hour Foundry Coke are offered at \$3 to \$3.10 a ton at oven. Main Line brands of both Furnace and Foundry Coke are offered at lower prices. The output of Coke last week showed a slight falling off compared with the previous week, due to the laying off of some ovens on account of slack demand.

## Philadelphia.

REAL ESTATE TRUST BUILDING, April 17, 1906.

The situation in Pig Iron is becoming somewhat precarious on account of the scarcity of Coke and Hard Coal. Several furnaces in this territory have been compelled to bank temporarily, and others are by no means certain of continuing unless the fuel situation improves. This is a matter of so much importance that makers are unwilling to quote on large lots of Pig Iron, although their regular trade get such moderate quantities as they need at a slight advance on last week's figures. There is, however, considerable hesitation by both buyers and sellers in regard to business during the last half of the year. Sellers are not inclined to commit themselves to large lots at to-day's prices, neither are buyers willing to pay advances which later developments may show to have been unnecessary. Under such conditions it is almost impossible to say what the outcome will be, as the possibilities are too varied to be estimated with any degree of confidence. The immediate effect, however, is increased firmness in prices, and in most cases slight advances on all deliveries during the remainder of the second quarter, the third quarter, as we have said, being to some extent left to take care of itself. The general situation (apart from strike possibilities) is excellent, and everything seems to indicate an unprecedented consumption of Iron and Steel during the remainder of the year. New business in Finished Material is not as heavy as it has been at some former periods, but deliveries are extraordinarily heavy. This, however, is probably due to the fact that old contracts are being drawn on to cover current requirements and that until something definite is known in regard to the fuel situation new business will be allowed to remain in abeyance. Mills are all busy, however, and in many cases deliveries are considerably in arrears.

**Pig Iron.**—The market is very unsettled, although prices are a shade higher. The great obstacle in the way of new business is the uncertainty in regard to fuel. Furnaces have already a large tonnage of orders on their books, and if the scarcity of fuel is to continue for any length of time and consumers require their usual quota of Iron, it would only aggravate matters to sell more without some reasonable certainty of being able to make deliveries. A shortage of Furnace Coke would also involve a shortage of Foundry Coke and other fuel, however, so that one might offset the other, but with a complete absence of any definite information in regard to the matter there is not much desire to do anything beyond what is necessary to meet current requirements. There has been a kind of vague impression that the dispute with the miners would pass off without serious interruption,

but now that the pinch is beginning to be felt the situation is causing more anxiety. There is a great deal of Pig Iron wanted, and if conditions were normal a large business would undoubtedly be done, but, as we have already shown, nobody wants to do anything that can be postponed until a later date. Business that had to be done, however, was at about \$18.75 for No. 2 X Foundry and \$18 for Basic Iron, but what the coming week will develop is a matter of uncertainty. If there should be more favorable prospects in regard to fuel prices would probably remain about where they are to-day, but anything unfavorable could hardly do other than cause an advance. The danger in that would be that if the strike should come to a sudden end (as it no doubt will), it might cause a reaction in the Iron market, which from a higher level of prices than those of to-day would probably have a bad influence during the remainder of the entire year. Makers of Pig Iron recognize the importance of a steady market, and strenuous efforts will be made to prevent anything likely to unsettle values. We make a slight revision in prices, which, however, may require another revision in course of a few days, but the range for Philadelphia and nearby deliveries is about as follows:

No. 1 X Foundry.....	\$19.25 to \$19.50
No. 2 X Foundry.....	18.50 to 19.00
No. 2 Plain.....	18.00 to 18.50
Standard Gray Forge.....	16.50 to 16.75
Ordinary Gray Forge.....	16.00 to 16.25
Basic.....	17.90 to 18.10
Low Phosphorus.....	25.00 to 25.50
Malleable.....	19.00 to 19.25
Bessemer.....	19.75 to 20.00

**Steel Alloys.**—The market is gradually easing up on early deliveries, and \$110 to \$115 could now be done for Ferromanganese, May or June deliveries. Quotations for the last half are \$80 to \$85, and somewhat firmer than they were a week ago. Silico Spiegel, 10 and 18 per cent., nominal, at \$40 to \$45.

**Steel.**—There is a strong market for Steel, and, although prices are nominally unchanged, only the best kind of business is taken at quoted rates. Mills are full of work, and although they are turning out large tonnages, it is hard to make satisfactory deliveries. Large lots of ordinary Open Hearth Steel may be done at \$29 to \$29.50, but \$30 and upward is required for small lots, and \$32.50 to \$35 for Forging Steel.

**Plates.**—New business is not as abundant as it was some time ago, although the mills are making heavy deliveries on old contracts. Universals are somewhat neglected, but Sheared and other Plates are well taken, all at unchanged prices, as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel.....	1.73 1/2	1.78 1/2
Flange or Boiler Steel.....	1.83 1/2	1.88 1/2
Marine, A. B. M. A. and Commercial Fire Box Steel.....	1.93 1/2	1.98 1/2
Marine.....	2.13 1/2	2.18 1/2
Locomotive Fire Box Steel.....	2.23 1/2	2.28 1/2

The above are base prices for 1/4-inch and heavier. The following extras apply:

	Extra per 100 pounds.
3-16-inch thick.....	\$0.10
Nos. 7 and 8, B. W. G.....	.15
No. 9, B. W. G.....	.25
Plates over 100 to 110 inches.....	.05
Plates over 110 to 115 inches.....	.10
Plates over 115 to 120 inches.....	.15
Plates over 120 to 125 inches.....	.25
Plates over 125 to 130 inches.....	.50
Plates over 130 inches.....	1.00

**Structural Material.**—Reports from this department are much the same as for months past, plenty of business coming from all directions. The capacity for production is much larger than ever before, however, so that the pressure for deliveries is appreciably relieved. There is a great deal of work on the books, and general activity seems to be fully assured for the remainder of the year. Prices are unchanged, as follows: Beams, Channels and Angles, 1.83 1/2c. to 2c., delivered.

**Bars.**—The demand is not active by any means, yet the mills seem to be fully employed. Specifications come in promptly, and as contracts begin to run out it is expected that renewals will be of a satisfactory character. It is thought that a great deal of business could be had at 1.63 1/2c., but manufacturers of first-class Bars want a little more than that and take none but picked trade at the figure named. Steel Bars are steady at 1.63 1/2c., but deliveries are rather slow, indicating that mills are well booked ahead and a little oversold for this and next month's deliveries.

**Sheets.**—The demand for Sheets is very good, but at the prices which have to be accepted the business is far from satisfactory in view of the high cost of material. Quotations for small and medium sized lots are about as follows: Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 and 26, 2.60c.; No. 27, 2.70c., and No. 28, 2.80c.

**Old Material.**—The monthly offerings by the railroads are rather larger than usual, but prices are firm and are not thought likely to go below to-day's figures. Consumers are inclined to resist the upward tendency, but are unable to make much impression, so that last week's prices are for the

present fully maintained, bids and offers for deliveries in buyers' yards being about as follows:

Scrap Steel Rails and Crops.....	\$17.00 to \$17.25
No. 1 Steel Scrap.....	16.75 to 17.00
Low Phosphorus Scrap.....	21.00 to 22.00
Old Steel Axles.....	20.00 to 20.50
Old Iron Axles.....	25.50 to 26.50
Old Iron Rails.....	21.50 to 22.00
Old Car Wheels.....	16.75 to 17.00
Choice Scrap, R. R., No. 1 Wrought.....	20.00 to 20.50
No. 1 Yard Scrap.....	18.00 to 18.50
Long and Short.....	16.50 to 17.00
Machinery Scrap.....	15.50 to 16.00
Wrought Iron Pipe.....	14.50 to 15.00
No. 1 Forge Fire Scrap.....	15.25 to 15.75
No. 2 Light Ordinary.....	10.75 to 11.25
Wrought Turnings.....	13.75 to 14.25
Axle Turnings, Choice Heavy.....	14.50 to 15.00
Cast Borings.....	10.25 to 10.50
Stove Plates.....	12.50 to 13.00
Grate Bars.....	12.00 to 12.50

## Cleveland.

CLEVELAND, OHIO, April 17, 1906.

**Iron Ore.**—The season of navigation for this year opened Sunday with the passage of boats through St. Mary's River and the Soo canals. All natural hindrances to the operation of boats have therefore been cleared away. But the season opened before the boat owners and the shippers were ready for it, in which respect the current spring is a duplicate of that of two years ago, when the strike of the masters and pilots tied up navigation until the middle of June. The analogy is further carried out by the contention of the mates for the recognition of their union through the affiliated body, the Longshoremen's Union. The labor situation on the lakes has not been changed during the week, but is likely to be by the conference the latter part of this week at Erie, Pa., between the seamen and the longshoremen to determine the jurisdiction over the pilots and mates. The intention of the longshoremen appears to be to use the mates as a leverage to force the lake seamen and the lake engineers to break away from their national union and become affiliated with the longshoremen, that the labor situation on the lakes may be centralized in one great organization, able to dictate terms to the dock owners and also to the vessel owners. The immensity of the proposed organization is adding bitterness to the fight over the preliminaries. Most of the mines in the Lake Superior region are reported to have started late this year and are not in position to ship much Ore for the time being. A few of the fleets have been fitted out, among them being that of the Steel Corporation, but the larger merchant fleets will not be ready to start for a week. In the event of a strike the Steel Corporation fleet will probably run without interruption, having obtained enough mates to operate the boats and having agreed with the seamen that there shall be no sympathetic strike. The corporation has non-union men on its South Chicago docks, while the docks at Conneaut are all fitted with automatic machinery, which can be run without the assistance of the Longshoremen's Union. The Pittsburgh Steamship Company's fleet of about 100 boats is expected to be constantly in operation. A few of the smaller fleets are similarly situated. The larger fleets have not started, not knowing what the labor outlook is to be. Since most of the lake Ore this year will be handled by wild boats, they consider it to their advantage to shorten the season as much as possible, and would take the labor difficulty as an excuse for not running their boats until the war is over. It is now found that not more than half as much Ore has been placed on contract as was placed a year ago. No wild charters have been reported, since the shippers have no Ore at the docks to move. The old contract rates hold, at 75c. from the head of the lakes, 70c. from Marquette and 60c. from Escanaba. The report is that the supply of Ore on Lake Erie docks is more nearly cleaned up this year than at any time.

**Pig Iron.**—All indications are that buying for the second half of the year has started. It is not heavy as yet, but inquiries which have come in indicate that a considerable tonnage is about to be placed. The market has eased further during the past week and now No. 2 Foundry is on the basis of \$16.50 in the Valleys for both prompt and future delivery. It cannot be learned that this price has been shaded. The agreement of leading Southern interests to hold for \$14, Birmingham, does not affect this territory as much as it might have done formerly. The building of furnaces in recent years at Buffalo, Cleveland, Toledo and Detroit has resulted in keeping the Southern furnaces out of the lake trade, and Southern Iron in mixtures is used in a constantly lessening degree. Furnace Coke has shown a recession in keeping with the easier conditions in the Coal trade. The best grades of 72-hour Foundry Coke are selling at \$3.25 at the oven, while Furnace Coke has eased to \$2.50 to \$2.60 at the oven.

**Finished Iron and Steel.**—The short supply of Billets and the effect on the Structural Steel situation of the starting of the new mill in the Pittsburgh district, are two factors of immediate interest. The Structural mill in question can produce 1000 tons per day, but the output is en-

tirely a question of Steel supply. As yet the exceptionally heavy demand for Shapes has not eased up. Premiums are still paid and jobbers are doing a good business. Specifications against old contracts are heavy. New contracts in the Cleveland territory are still light. Last week a Lake Erie steamboat company gave an order to the American Shipbuilding Company for a new Steel passenger steamer. The Steel for this steamer is understood to have been included in a previous open contract given to the Steel Corporation. Forging concerns are said to be in distress for a lack of Steel. Forging Billets are selling at \$35 at the mill, and Bessemer 4 x 4 Billets have sold at \$28 and \$29, at the mill. It is reported that some of the forging works have been forced to buy Steel Bars, to fill their needs. Sheets are strong on the old basis of 2.15c. for No. 10 Black, out of stock; 2.70c. for No. 28 one pass cold rolled and 3.70c. for No. 28 X Galvanized. The market for Bar Iron continues weak, due to the Western competition and the lower prices of Scrap. Western mills are selling at 1.50c., Pittsburgh, while the mills in this immediate territory are holding at 1.60c., Youngstown.

**Old Material.**—The market is weak, the supply good, and the mills are buying but sparingly. Prices hold about as they have been, dealers quoting to the trade as follows, f.o.b. Cleveland, gross tons: Old Steel Rails, \$14.50 to \$15.50; Old Iron Rails, \$22 to \$23; Iron Car Axles, \$17.50 to \$18.50; Heavy Melting Steel, \$14 to \$15. Net tons: Cast Borings, \$8.50 to \$9; No. 1 Busheling, \$12.50 to \$13.50; No. 1 Railroad Wrought, \$15 to \$16; No. 1 Cast, \$13.50 to \$14.50; Stove Plate, \$11; Iron and Steel Turnings and Drillings, \$10 to \$11.

## Cincinnati.

FIFTH AND MAIN STS., April 18, 1906.—(By Telegraph.)

**Pig Iron.**—The forward movement, which last week was barely visible, has developed to some extent, and the tone of the market is gradually getting stronger. There are quite a number of medium sales reported that total considerable tonnage, and this has caused quite an optimistic feeling to prevail throughout the trade generally. Several of the larger Cast Iron Pipe makers have taken considerable quantities of Iron during the past ten days, and are said to be willing to take more if conditions are satisfactory. There is scarcely a doubt that prices on Southern Foundry brands are firmer and better established than they were a week since, and we are unable at this time to find scarcely a trace of any \$13.50 Iron, which last week appeared to be fairly plentiful. The determined stand taken by the three larger Southern producers has doubtless had much to do with this condition of affairs, and the general opinion to-day is that from \$13.75 to \$14 more nearly represents the market. Gray Forge and the lower grades continue weak. For some reason the time is not yet ripe for consumers generally to come forward for the third and fourth quarters, but it surely cannot be delayed for any great length of time, as consumption is keeping up at an enormous rate and depleted stocks must be augmented. While the general Foundry trade taken locally is said to be less active than it was several months since the founders along specialty lines are reported to be crowded with work. Inquiries from Indiana points call for 1000 tons of No. 2 Foundry and 1000 to 1500 tons of Malleable. There is also an inquiry from southern Ohio for 1000 tons of Gray Forge and another for 1000 tons or more of Malleable, both of which will probably be closed to-day. Freight rates from Hanging Rock district are \$1.15, and from Birmingham \$3. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	\$17.25 to \$17.50
Southern Coke, No. 2.....	16.75 to 17.00
Southern Coke, No. 3.....	16.25 to 16.50
Southern Coke, No. 4.....	15.75 to 16.00
Southern Coke, No. 1 Soft.....	17.25 to 17.50
Southern Coke, No. 2 Soft.....	16.75 to 17.00
Southern Coke, Gray Forge.....	15.00 to 15.25
Southern Coke, Mottled.....	14.50 to 14.75
Ohio Silvery, No. 1 (8 per cent. Silicon).....	21.65 to 22.15
Lake Superior Coke, No. 1.....	17.90 to 18.15
Lake Superior Coke, No. 2.....	17.40 to 17.65
Lake Superior Coke, No. 3.....	16.90 to 17.15

### Car Wheel Irons.

Standard Southern Car Wheel.....	\$23.50 to \$24.00
Lake Superior Car Wheel.....	22.00 to 22.50

**Coke.**—The demand is fair, but the tone of the market is easier. There appears to be no surplus, but shipments are coming forward with regularity. Prices are unchanged, the best brands of Connellsville and Virginia Foundry being quotable at \$3 to \$3.25, f.o.b. ovens.

**Finished Iron and Steel.**—The demand continues strong, with contracts along structural lines showing heavy gains. Deliveries are, however, said to be moving forward with more ease. The general situation is very satisfactory. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.63c., with half extras; the same, in smaller lots, 2c., with full extras; Steel Bars, in carload lots 1.63c., with half extras; the same, in small lots, 1.85c., with full extras; Base Angles, 1.83c., in carload lots; Beams and



Channels, in carload lots, 1.83c.; Plates, 1/4-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2.15c.; in smaller lots 2.70c.; 14-gauge, in carload lots, 2.05c.; in small lots, 2.60c.; Steel Tire 1 x 1/4 inch or heavier, 1.83c., in carload lots.

**Old Material.**—Trade is reported as only fairly active, but dealers are expecting an early change for the better. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, \$15 to \$15.50 per net ton; Cast Borings, \$8.50 to \$9 per net ton; No. 1 Cast Scrap, \$12 to \$13 per net ton; Iron Rails, \$22 to \$22.50 per gross ton; Steel Rails, rolling mill lengths, \$15 to \$16 per gross ton; Relaying Rails, 56 lbs. and upward, \$28 to \$29 per gross ton; Iron Axles, \$24 to \$24.50 per net ton; Car Wheels, \$18.50 to \$19.50 per gross ton; Low Phosphorus Scrap, \$18 to \$19 per gross ton.

## Birmingham

BIRMINGHAM, ALA., April 16, 1906.

**Pig Iron.**—While the market has been somewhat less active this week than last, the prevailing conditions are entirely satisfactory to the furnacemen. Confidence, it seems, has been restored and many buyers are again in the market. The sales for this district since April 1 have amounted to about 50,000 tons, and while the Pipe interests have been the largest buyers they are by no means the only purchasers, numerous orders from small foundries which aggregate a considerable tonnage having been placed. Most of the sales are for shipment prior to July 1, but some are for third quarter delivery, though as yet comparatively few orders are being placed for shipment during the second half of the year. Inability to furnish desired grades has prevented several good sized orders being placed, and so scarce is No. 2 Soft that it readily commands a premium. The railroads are again in good shape and Iron is moving much more satisfactorily than a few weeks since.

The Tennessee Coal, Iron & Railroad Company now has its Alice Furnace, in addition to its five stacks at Ensley, on Basic Iron, there being an exceptionally good demand for this grade at the present time.

The old Citico Furnace at Chattanooga, which was bought some months since by the Lacey-Buek Iron Company, has been rebuilt and will be blown in within the next few days.

**Cast Iron Pipe.**—No better illustration of the prosperity of the Cast Iron Pipe business could be given than the immense quantities of Pig Iron the Pipe interests have recently purchased. Not only is business coming from new plants, but every town in the country seems to be prospering, which, of course, requires an extension of its water and gas mains. These orders, ranging from a few hundred to a thousand or so tons each, in the aggregate amount to an enormous quantity, and while ordinarily production is equal to consumption, it looks impossible for present plants to furnish all the Pipe demanded this year. In fact, on certain sizes many foundries have sold their outputs for months ahead. In the Cast Iron Soil Pipe line business is very active, and in view of the unprecedented building operations already planned manufacturers are looking forward to a record breaking year. Prices on Water Pipe are understood to be firm at about the following per ton, f.o.b. cars foundry:

4 to 6 inch.....	\$27.00
8 to 10 inch.....	26.00
12 to 16 inch.....	25.00
24 to 48 inch.....	24.00
Gas Pipe, \$1 per ton extra.	

**Old Material.**—Dealers report quite a satisfactory week. Some nice orders have been booked and inquiries are coming in much more freely. No material advance in price over former quotations is reported, but a decidedly stronger feeling seems to exist, with prices firmly established. Good stocks are on hand and quotations are approximately as follows per gross ton, f.o.b. cars here:

Old Iron Rails.....	\$17.50 to \$18.00
Old Iron Axles.....	18.00 to 18.50
Old Steel Axles.....	16.00 to 17.00
Old Car Wheels.....	16.00 to 16.50
No. 1 Railroad Wrought.....	15.00 to 15.50
No. 2 Railroad Wrought.....	14.50 to 15.00
No. 1 Country Wrought.....	13.50 to 14.00
No. 2 Country Wrought.....	11.50 to 12.00
Wrought Pipe and Flues.....	11.50 to 12.00
Railroad Malleable.....	9.50 to 10.00
Mixed Steel.....	11.00 to 11.50
No. 1 Machinery Cast.....	9.00 to 9.50
Stove Plate and Light Cast.....	

The firm of Viele, Cooper & Blackwell has been incorporated with a capital of \$1,500,000 to carry on business as consulting and contracting mechanical, electric and hydraulic engineers. It has opened offices at 49 Wall street, New York. The directors are Maurice A. Viele, New York; Hugh L. Cooper, Stamford, Conn., and Francis O. Blackwell, Englewood, N. J.

## New York.

NEW YORK, April 18, 1906.

**Pig Iron.**—There have been some irregularities recently in the Foundry Iron markets, the position of different sellers varying widely. Some of the makers are holding off, influenced by the probability of an Anthracite Coal strike, while others seem disposed to take business freely. The Southern makers are doing little in this market. We quote: Northern No. 1 Foundry, \$18.50 to \$19; No. 2 Foundry, \$18 to \$18.75; No. 2 Plain, \$17.50 to \$18. Southern Iron is quoted \$18.50 to \$18.75 for No. 1 Foundry and \$17.75 to \$18 for No. 2 Foundry.

**Steel Rails.**—The ability of the mills to take care of the Rail business booked and to give deliveries in the season of most active construction work is put under severe strain. Some maneuvering was necessary to take care of an additional order for 25,000 tons for the Southern Pacific that came in the past week, this going to the Carnegie Steel Company. An additional 20,000 tons for the New York Central has been booked by the Lackawanna Steel Company. For the Pittsburgh, Harmony, Butler & New Castle 9500 tons were taken; for the Toledo & Ohio Central, 2000 tons; for the Kanawha & Michigan, 2000 tons; for the Cleveland Frog & Crossing Company, 1000 tons, with a considerable tonnage of other minor orders. The announcement of a \$29 price for Open Hearth Rails for 1907 has been made by the Tennessee Coal, Iron & Railroad Company, and it is understood that company has already booked its capacity to the middle of next year, the orders including one of 42,000 tons for the Louisville & Nashville.

**Structural Material.**—So far as new business is concerned the week has been quieter than those that have preceded it. Bookings of the American Bridge Company were limited to relatively small contracts. Two contracts closed up a short time ago have just been announced—5200 tons of bridge work for the New York & Long Branch Railroad, taken by the Pennsylvania Steel Company, and a 4000-ton viaduct over Moodna Creek, on the Erie Railroad, taken by the McClintic-Marshall Construction Company. The building strike in New York is responsible for holding back some projects that were expected to reach the contract stage ere this, and it promises to reduce the tonnage of Steel that was expected to enter into new buildings in New York City in 1906. New contracts with the mills have been of small volume in the past week, and jobbers and fabricating firms carrying stocks are not disposed under present money conditions to load up largely. The outlook is thus for a quieter market in the next two months, a condition the mills will not seriously object to for the present. Business out of stock keeps up steadily, and 2 1/2c. up to 2 3/4c., and occasionally higher, is paid for plain material cut to length. For mill shipments, f.o.b. New York, we quote as follows: Beams, Channels, Angles and Zees, 1.84 1/2c.; Tees, 1.89 1/2c.; Bulb Angles and Deck Beams, 1.90 1/2c.; Beams, 18 to 24 inch, 0.10c. extra; Angles over 6 inches, 0.10c. extra.

**Bar Iron.**—A meeting of Eastern Bar Iron manufacturers was held in this city April 12, at which the situation was thoroughly considered, and it was the opinion of those present that prices could easily be maintained on the basis of 1.50c., Pittsburgh, or better. Their position appears to be vindicated by the character of the market since then. Inquiries have been increasing and sales are also much better. Buyers are not inclined to place contracts, however, but are purchasing for immediate necessities only. Bolts and Nuts are very active, and the export trade is showing improvement. The demand for Steel Bars is also quite satisfactory. Iron and Steel Bars are quoted at 1.64 1/2c. to 1.74 1/2c., tidewater, according to specifications, time of delivery, &c.

**Plates.**—Sales agents report current business confined to small lots. Inquiries do not point to any early increase in the volume of local trade. Quotations are firmly maintained as follows, at tidewater: Sheared Tank Plates, 1.74 1/2c. to 1.84 1/2c.; Flange Plates, 1.84 1/2c. to 1.94 1/2c.; Marine Plates, 2.14 1/2c. to 2.24 1/2c.; Fire Box Plates, 2.24 1/2c. to 2.60c., according to specifications.

**Cast Iron Pipe.**—The Department of Water Supply of the City of New York opened bids April 11 on about 25,000 tons of 48-inch Pipe and a large quantity of specials. Contracts had not been awarded up to the time of going to press. The city will open bids May 2 for 4000 tons of mixed sizes for Brooklyn. The large Philadelphia contract which has been in the air for some time is daily expected to be advertised. Eastern manufacturers report a steadily increasing demand for the larger sizes of Pipe, orders being quite frequently received now for sizes running from 48 to 60 inch. This is in marked contrast to conditions last year, when the demand ran so heavily to small or medium sizes. We quote \$30.50 per net ton for carload lots of 6-inch at tidewater, with the market steadily growing stronger.

**Old Material.**—Business is very good and higher prices are predicted. Dealers say they can now ship almost anything in the line of Old Material if they are willing to meet the views of buyers. Sales made by individual dealers have

in some cases run up to 5000 tons of different grades of Scrap for the week. Steel Scrap finds quite a steady market, but consumers are not disposed to speculate. A good quantity of Crop Ends was sold at \$17.50, delivered in eastern Pennsylvania. A very good demand is noted for Cast Borings, Wrought Turnings and Wrought Pipe. Cast Iron Scrap and Stove Plate are also being bought freely. The higher grades of Rolling Mill Stock are a little slow, as only a few of the mill owners are now inclined to make purchases for more than their immediate wants. Approximate prices per gross ton for New York or vicinity are as follows:

Old Iron Rails.....	\$20.00 to \$21.00
Relaying Rails.....	25.50 to 26.00
Old Steel Rails, rerolling lengths.....	16.50 to 17.50
Old Steel Rails, short pieces.....	15.00 to 16.00
Heavy Melting Steel Scrap.....	15.00 to 16.00
Standard Hammered Iron Car Axles.....	24.50 to 25.50
Old Steel Car Axles.....	20.00 to 21.00
No. 1 Railroad Wrought.....	19.00 to 20.00
Iron Track Scrap.....	16.50 to 17.50
No. 1 Yard Wrought, long.....	17.00 to 18.00
No. 1 Yard Wrought, short.....	15.00 to 15.50
Wrought Pipe.....	13.50 to 14.50
Light Iron.....	10.00 to 10.50
Cast Borings.....	9.00 to 9.50
Wrought Turnings.....	12.50 to 13.50
Old Car Wheels.....	17.00 to 18.00
No. 1 Machinery Cast.....	15.00 to 16.00
Stove Plate.....	11.50 to 12.00
Grate Bars.....	10.00 to 10.50
Malleable Cast.....	16.50 to 17.50

### Metal Market.

NEW YORK, April 18, 1906.

**Pig Tin.**—The holidays in London, extending from Thursday noon until Tuesday morning, largely restricted business in America. Sales were made on Thursday of last week at 38.50c., on Monday of this week some small lots went at 38.55c., while on Tuesday, owing to the higher cables from London, being £177 10s. for spot and £174 15s. for futures, sales were made at the higher figure of 38.90c. To-day's London cables are easier, being 5s. off for spot at £177 5s. and 15s. off for futures at £174. To-day's price in New York is 38.85c. There is at the present time a better stock of metal in this city, but dealers are still holding firm and prices are considerably above London parity. It is believed that the London corner will continue throughout the month of April and may possibly extend into May. There are few inquiries for future shipments, but holders of metal seem to be reluctant to make any quotations regarding future deliveries. Arrivals of ten days to two weeks in advance probably could be obtained at concessions of 0.25c. The high prices which have been prevailing do not seem to have restricted consumption to any appreciable extent. The arrivals so far this month have been large, aggregating 3048 tons. There are afloat for American ports 1533 tons, of which 450 tons are scheduled to arrive in a short time. Powell's estimate of Straits shipments for the first half of April, 1906, is 2386 tons, against 2492 tons during the corresponding period last year.

**Copper.**—The market continues firm, and manufacturers are buying both Lake and Electrolytic for June and July deliveries. Some of the leading companies are largely sold up for June delivery, and there is very little April and May Copper for sale. Quotations for shipment, 30 days, are as follows: Lake, 18.62½c. to 18.75c.; Electrolytic, 18.25c. to 18.50c.; Casting Grades, 18.12½c. to 18.37½c. The larger Brass mills have been in the market for good sized tonnages. European buyers are also making purchases for nearby shipment, and it is confidently believed by those acquainted with the market that the present strength will continue at least well into the second quarter. In London prices are practically unchanged from last week at £85 for spot, £82 for futures and £88 15s. for Best Select.

**Pig Lead.**—There has been a better demand for Lead, but this is to be expected at this season of the year, as we are now entering into the largest consuming period. Shipments are prompt and the price is unchanged from our last report at 5.35c. to 5.45c. for spot. In St. Louis the market is firm at 5.30c. to 5.32½c. The American Smelting & Refining Company continues to quote shipment Lead in 50-ton lots at 5.35c. The London market is unchanged at £15 13s. 9d.

**Spelter.**—A steady business has been going on at quotations ranging from 6.05c. to 6.15c., New York delivery, and 5.95c., St. Louis. The London market is unchanged at £25 15s.

**Antimony.**—Another twist in the London price resulted in an advance of £5, and Antimony in this city is now held at 20c. to 21c. for Cookson's and Hallett's; 19.50c. to 20.50c. for other grades.

**Quicksilver.**—The price is unchanged, at \$41 per flask of 75 pounds in 100-flask lots. In San Francisco, jobbing orders are held on a basis of \$40, while export orders are held at \$39. In London, Rothschild's price is unchanged, at £7 7s. 6d.

**Aluminum.**—The principal producer of this metal is still much belated in making deliveries and oftentimes supplies

have to be secured through second hands, at an advance over the usual quotations.

**Tin Plates.**—A heavy business is being done in Bright Plates, although new orders are small, but specifications on old contracts are very heavy. For 100-lb. IC Coke Plates, f.o.b. New York, \$3.79 is quoted; f.o.b. Pittsburgh, \$3.60.

**Old Metals.**—There is a better demand for Copper and Brass Scrap, although prices are practically unchanged. We quote dealers' buying prices as follows:

	Cents.
Copper, Heavy Cut and Crucible.....	17.75 to 18.00
Copper, Heavy and Wire.....	17.25 to 17.50
Copper, Light and Bottoms.....	15.50 to 16.00
Brass, Heavy.....	11.75 to 12.00
Brass, Light.....	10.00 to 10.25
Heavy Machinery Composition.....	15.50 to 15.75
Clean Brass Turnings.....	10.25 to 10.75
Composition Turnings.....	13.00 to 13.25
Lead, Heavy.....	5.00 to 5.15
Tea Lead.....	4.85 to 4.90
Zinc Scrap.....	4.90 to 5.10

The total importations of Antimony into the United States for the eight months ending February 28, 1906, amounted to 4,625,875 lbs., or more than the total imports for the fiscal years ending June 30, 1905, and June 30, 1904, which amounted to 4,523,281 lbs. and 3,930,879 lbs., respectively. Of the total importations during 1905 about 67 per cent. came from the United Kingdom.

### Iron and Industrial Stocks.

NEW YORK, April 18, 1906.

The depression in the stock market which prevailed at the time of our last report gradually gave way to a better condition, under the influence of a more abundant supply of money. This was partly secured by arrangements by New York bankers for importations of gold. The movement steadily improved until Monday of this week, when the highest values were recorded for the period ending with Tuesday. The range of prices during this period was as follows: Car & Foundry common, 43¼ to 45½, preferred 101¼ to 102; Locomotive common 67¼ to 71¼; Steel Foundries preferred 46½ to 47¼; Colorado Fuel 61½ to 63¼; Pressed Steel common 53½ to 57¼, preferred 99 to 99¼; Railway Spring common 55¼ to 56¼; Republic common 30¼ to 32, preferred 103 to 103½; Sloss-Sheffield common 81¼ to 83¼; Cast Iron Pipe common 51¼ to 52¼, preferred 93½ to 94½; Steel common 42½ to 44½, preferred 107½ to 109½. Tennessee Coal was very quiet, with the only sales reported at 149 to 149½. United States Steel bonds sold at par in considerable quantities. Prices to-day have been depressed by the calamity at San Francisco. Last transactions in active stocks up to 1.30 p. m. to-day were reported at the following prices: Can common 8¾, preferred 64¼; Car & Foundry common 43, preferred 102; Locomotive common 67¾, preferred 115½; Steel Foundries common 12, preferred 45½; Colorado Fuel 60¾; Pressed Steel common 55¼, preferred 99¾; Railway Spring common 55; Republic common 30¼, preferred 101¾; Sloss-Sheffield common 80; Tennessee Coal 150; United States Cast Iron Pipe common 49¾, preferred 93¾; United States Steel common 42½, preferred 107¼.

At a special meeting of the stockholders of the Barney & Smith Car Company, held last week at Dayton, Ohio, the new financial plan of the directors was approved. A new issue of \$2,000,000 5 per cent. first mortgage bonds and an increase of \$1,000,000 in the common stock were authorized. The \$1,000,000 6 per cent. first mortgage bonds now outstanding are to be retired. It was arranged to give the preferred stockholders new common stock in lieu of the 36 per cent. back dividends, which amount, in the aggregate, to about \$900,000.

The United States Steel Corporation's net earnings for the month of March are said on excellent authority to have been the largest for any one month in its history, or about \$14,000,000, against \$13,120,930 in May, 1902, the best previous month.

**Dividends.**—International Steam Pump Company has declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable May 1.

Henry R. Worthington has declared the regular semi-annual dividend of 3½ per cent. on the preferred stock, payable May 1.

National Steel & Wire Company has declared the regular quarterly dividend of 1¼ per cent. on the preferred stock, payable May 2.

Bethlehem Steel Corporation has declared the regular quarterly dividend on the preferred stock, payable May 1.

The stage of water on the Great Lakes is reported to be considerably lower than at this time last year, and vessel owners have been advised not to load much deeper than 18 feet for first trips.



## The Machinery Trade.

NEW YORK, April 18, 1906.

Nothing of very great importance was reported in the machinery trade the past week aside from the announcements of several companies to build new buildings, which will necessitate the purchase of a large amount of new machinery collectively. Most of these new structures will be built as soon as possible, as they are badly needed. This activity in expansion bids fair to largely augment the present good demand for machine tools and practically assures a good trade for some time. The curiosity of machinery merchants has been aroused by the inquiries for \$100,000 worth of machine tools for the proposed new automobile fittings plant and there has been considerable speculation as to the identity of the company which purposes to establish the plant, but thus far no disclosures beyond those printed in these columns last week have been made. We understand that it is the desire of the parties interested to keep the project under cover until the equipment has been purchased. This is the scheme in which Charles D. Cooke of Paterson, N. J., is interested.

Now that the Japanese have put in operation the mines which were abandoned during the late war the demand for mining machinery for that country has fallen off to a considerable extent; but there are many inquiries just now for heavy power machinery from Japan, although the commission men who have them in hand are afraid that they cannot place the business. The Japanese are in a hurry to resume the industries that were checked during the war and the calls are mostly for machinery for early delivery. This stipulation has prevented a good many of those who have been asked to submit bids from figuring, as manufacturers here are in most cases rushed and orders that are in a hurry may consequently be placed abroad. In connection with the demand for heavy power machinery it may be added that the orders placed by the big steel interests during the last month have had a tendency to steady prices, and in consequence some of those in the trade who were cutting under each other's bids have found that they have enough work on hand to keep them busy and consequently are not so anxious to secure business as they were. Reports of price cutting have been less frequent of late, and the good business has put a crimp in the dreaded price war in this line.

Within the next six or eight months it is expected that operations will be started on the proposed tunnel under the Delaware River from Philadelphia to Camden, N. J., by the Intercity Link Railroad, of which Clarence Wolf of the banking firm of Wolf Bros., Philadelphia, is the moving spirit. It is estimated that the construction of the tunnel will cost about \$3,000,000.

### Important Machinery Requirements.

The Pennsylvania Railroad intends to enlarge its Altoona shops by the erection of four new buildings, the plans for which have not yet been fully completed. The principal building will be about 120 x 800 feet, of brick and steel, and will house the wheel, tin, lathe and other departments. The construction of this large shop will be begun within a short time. The cost of the construction and equipment of these additional shop buildings is expected to reach \$500,000. The directors of the Pennsylvania Railroad have authorized President Cassatt to enter into an agreement with the Hudson River Tunnel Company for the joint use of a railway right of way between Jersey City and Newark, N. J. This is an initial step toward an extended rapid transit system between the two cities. Improvements, involving an expenditure of \$500,000, were also authorized by the directors.

There is quite a little additional machinery to be purchased by the Brooklyn Rapid Transit Company for equipping the additions to its Thirty-sixth street shops, construction of which is now under way. The company is spending about \$7,000,000 on improvements, and a small part of this amount will be used this year in the purchase of new machinery.

A large car wheel plant is to be established at Savannah, Ga., by the Decatur Car Wheel & Mfg. Company, manufacturer of chilled iron car wheels, Atlanta, Ga., which it is expected will soon come into the market for quite a large quantity of mechanical equipment. In the former city 10 acres of ground have been purchased, on which a plant will be erected at a cost of about \$200,000. While plans have not yet been fully completed, it is the intention to erect a plant with a capacity of about 200 car wheels per day.

For a long time the Otto Gas Engine Works, Philadelphia, Pa., has been contemplating the erection of new shops at Wilmington, Del., and now that it has been decided to go ahead with the project the company will soon purchase a large quantity of machinery to equip its proposed new building. The company does not intend to move its entire plant to Wilmington, but is about to build new shops there for

the construction of larger work than its present facilities will permit. The building to be erected will be of steel, 140 x 600 feet, the power for which will be supplied by gas engines of the company's construction. It has not yet been decided what new machinery will be required for the new plant, which will be erected on a tract of 57 acres purchased in 1904. A. V. Powell, Chamber of Commerce Building, Chicago, Ill., is engineer in charge.

The Western Electric Company, 57 Bethune street, New York, has rented a large factory building on Seventy-second street, and it is the company's intention to double its manufacturing capacity in this city. Machinery is now being installed in the Seventy-second street plant and it is expected that within two months at least part of the force now employed in the Bethune street plant will be transferred to the new building. The company has for years been one of the largest purchasers in the Metropolitan district and of late has been placing a good deal of business, among machine tool men especially, for equipment for the new plant. It was rumored some time ago that the company intended erecting a new plant in this vicinity, but it is now thought that if any such idea was entertained it was given up, as the company has an extended lease on the Seventy-second street building and has ample room for increasing its output. Conditions in the Bethune street plant have been crowded for some time and it has been run to its full capacity. A large portion of the new plant will be used for the manufacture of telephone equipment, in which line the company is the largest manufacturer in the country, it having practically a monopoly of that business.

The S. R. Dresser Mfg. Company, Bradford, Pa., is considering the installation of some hydraulic or power presses for sheet metal work and would be pleased to receive catalogues from manufacturers of such machinery. The company has purchased 8 acres of land in East Bradford, where it will erect a new plant for the manufacture of Dresser pipe couplings.

The Frazer & Jones Company, Syracuse, N. Y., has not yet decided what horse-power it will require nor has it decided whether it will equip its new foundry with steam or electric power. The other machinery equipment will consist of molding machines, blowers, tumbling barrels, core ovens, &c. The new foundry will be of steel construction and modern in every respect.

Thomas Purvis, Birmingham, Ala., has just commenced to manufacture the Fox reversible sad iron. Temporarily work is being done at 423 North Nineteenth street, but ground has been broken for a plant to be erected in North Birmingham. The main building will be 32 x 150 feet and the foundry 40 x 60 feet, both constructed of brick. A portion of the machinery has been purchased, but several gasoline engines, from 5 to 15 horse-power, are yet wanted; also a dozen bench and multiple drills, 300 to 500 ampere nickel plating outfit and a full line of foundry supplies. The works are expected to be in full running by June 1.

The Pottstown Machine Company, Pottstown, Pa., is building an addition, 45 x 100 feet, which will be used as an erection shop, in which will be installed an overhead crane. The balance of the machinery has been purchased.

The Southern Turpentine Company, Lake Butler, Fla., is in the market for a steam hammer to split wood. The company wants it with a wedge instead of a hammer, as the wedge is desired to split logs and stumps by having them lay horizontally and securely dogged. A small steam outfit is preferable to a belt driven one. A trolley hoist that will pick up 300 pounds from a wagon and move it about the works is also required.

The Walter Automobile Company, which has been buying machinery in the New York market lately to equip a plant at Trenton, N. J., has been organized with \$1,000,000 capital by New Jersey financiers to manufacture the Walter automobile, which is now made in a small plant at 49 West Sixty-sixth street, New York. When the Trenton plant is completed, which it is expected will be by July 1, the New York place will be used as a salesroom and garage. It is the intention of the company to turn out about 700 automobiles a year at first, and the output will include heavy auto trucks, a line which is not made by the company now. A four-story brick building, which was erected by the Consumers' Brewing Company, at Trenton, and was never used for manufacturing purposes, is being fitted up for the automobile plant, and a machine shop and blacksmith department, 200 x 300 feet, is being erected in addition. The four-story factory building will be used for the upholstering, assembling and finishing department and the cabinet work will be done in the building, as well as the varnishing, &c. All of the machinery used in the plant will be electrically driven and it will be up to date in every particular. The company expects to have all its equipment delivered by July 1, and consequently some rush orders are being placed. The V. J. Hedden Company of Newark has a contract for erecting the new building, and the foundation has been laid and work has been begun on the structure. The directorate of the corporation include a number of well known men, among them Ferdinand and Washington Roebing, Senator John F. Dryden of New Jersey, and his son-in-law, Colonel Anthony R. Kuser, John C. Eisle, William Walter, Herman Unger.

Adolph Huepfel, Frederick Kuser, Thomas Barr, General Edward Murray and V. J. Hedden.

An addition is to be made to the plant of the Valley Forge Cutlery Company, at 28 South Sixth street, Newark, N. J., in the shape of a four-story brick building, 60 x 83 feet. The structure will cost about \$25,000, and there is a freight elevator and other machinery equipment to be bought, including additional power apparatus.

Work has been begun on the extensive additions to be made to the plant of the Stirling Boiler Company, at Barberton, Ohio. The additions are expected to accommodate the machinery now installed in the Aultman-Taylor Works at Mansfield, Ohio, which are to be removed to Barberton, and in addition to that provisions will be made for housing new equipment, which will be installed in order to allow for the carrying out of the company's plans to about double the size of its present plant at Barberton. It is understood that the machinery equipment for the extensive additions has not been purchased as yet. The details in that line are being arranged by the engineering department at Barberton, and it is not known just yet where the purchasing will be done, although it is thought that at least the more important orders will be closed at the New York office. The published statement that the Bayonne works of the Babcock & Wilcox Company, which was recently allied with the Stirling Company, are to be moved to Barberton, is emphatically denied by the officials of the Stirling Company, who declare that no plans are contemplated for a coalition of the manufacturing interests of the two corporations.

Hugh Kelly, 81 Wall street, has been closing orders during the past week for the equipment for the large sugar mill which is to be built at Nipa Bay, Cuba, by the Nipa Bay Company of Boston, which is one of the subsidiary interests of the United Fruit Company. The closing of these orders in New York has given the trade here quite a lift, as the plant is to be one of the largest of its kind on the island. Among the contracts closed were orders for three 250 horse-power engines, which were secured by the Ridge-way Dynamo & Engine Company through McClave, Rimmer & Co., 85 Liberty street, the New York representatives. Orders for three 300 kw. generators and two 35 horse-power motors and one 15 horse-power motor and two 10 kw. boosters were placed with the Westinghouse Electric & Mfg. Company. It is understood that most of the other machinery equipment has been decided upon and orders will be given very shortly. The plant at Nipa Bay will be capable of handling 5000 tons of cane per day, and the Baltimore Bridge Company will erect the building, which will contain 2300 tons of steel.

#### Power Work.

The Maitland River Power Company, Limited, Goderich, Ont., has been organized with a capital stock of \$500,000 and will expend about \$250,000 in the development of a 2500 horse-power hydraulic plant, which can be increased to 5000 horse-power. The company has engaged H. Van Schon of Detroit, Mich., to make the necessary surveys and estimates, and it expects to ask bids for the machinery about June 1.

Bids for constructing and erecting the Canarsie pumping station, near Avenue D and Remsen avenue, in the Borough of Brooklyn, will be received at the office of the Department of Water Supply, Gas and Electricity of the city of New York, in the Park Row Building, until May 2. The list of requirements includes two pumping engines, including their auxiliary fixtures; three boilers and a large quantity of cast iron pipe and special castings. It is understood that plans are being prepared by the city engineers for other similar stations, and it is said in the trade that preparations are also being made to overhaul a number of existing plants.

The Case Mfg. Company has, through its New York office, secured a contract for a special electric jib crane to be erected at the new Waterside station of the New York Edison Company. The Edison Company has also placed an order with the Case Company for a 75-ton four-motor crane, with a 10-ton auxiliary hoist and 53-foot span, which it is expected will be delivered within the next two months. The buying for the new plant is about completed, although there may remain some scattered orders for minor equipment. The plant is nearly ready for use and within a short time it will be put into commission.

#### Business Changes.

The Mine & Smelter Supply Company, Denver, Col., manufacturer of and dealer in machinery and supplies, will hereafter make New York its headquarters instead of Denver, having taken 3000 square feet of office space at 42 Broadway for occupancy on or about May 1. The company already has its own houses at Salt Lake City, El Paso, City of Mexico, and it is about to establish other branches in the extreme Northwest, in Oregon or Washington. It is also contemplating competing for the same class of trade in South America by the opening of a branch there at some advantageous point. In addition to the lines already staple with the company, it will manufacture in the near future gas and water works supplies.

The Pittsburgh Piping & Equipment Company has re-

moved its offices from the Westinghouse Building to its own office building at the works, 3422-3428 Smallman street, Pittsburgh. Its Cleveland office has been removed from Rose Building to 53 Public square.

The erecting department of the Westinghouse Electric & Mfg. Company for Manhattan Borough, which until recently was located on the nineteenth floor of the Trinity Building, has been moved to the Fuller Building, corner of Twenty-third street and Broadway. This change was made necessary because the department was in want of more space than it was possible to obtain at 111 Broadway, and also because the uptown location is more suitable and convenient for the construction work, most of the power plants being located within easy reaching distance.

**Catalogues Wanted.**—The Newark Free Public Library, Newark, N. J., has recently started a collection of trade catalogues and desires to receive catalogues from manufacturers of all kinds of mechanical devices. The library is used by a large number of manufacturers and mechanics.

### Philadelphia Machinery Market.

PHILADELPHIA, Pa., April 17, 1906.

The local machinery market continues fairly active, although the amount of business placed the past week has fallen off somewhat in comparison with that of the previous one. Most of the buying recently has been from the more distant parts of what is known as the Philadelphia territory, particularly from the south central portions of the State. Owing to the still uncertain conditions governing the probable settlement of the labor disputes between the anthracite mine workers and the operators, business from the coal district is practically at a standstill and will no doubt so continue until some settlement in that matter is reached. Local business is also influenced to a great extent by the same conditions. Many manufacturers have anticipated their fuel requirements and have coal enough on hand for their needs for months to come. Others, however, are not as well prepared, and there would no doubt be considerable delay in meeting deliveries for tools and machinery already on order should a strike be declared.

Several propositions of fair size are before the trade. In some cases bids have been made, but purchasers withheld placing the contracts. As a rule the business transacted recently has been in small lots only, the greater portion being for single tools mostly for replacement. The railroads continue to hold up specifications for any quantity of tools, but orders for a tool here or there for immediate use are being placed from time to time. The demand for heavy tools, which has to a certain extent been somewhat irregular, has again fallen off, the greater portion of the business before the trade at the time being for tools of the medium and lighter classes. Manufacturers, however, continue fully occupied. The volume of business coming in precludes any possibility of catching up on deliveries, which in some lines have become more extended. Dealers' floors are in many instances depleted, and manufacturers are unable to supply tools even in undesirable sizes for exhibition purposes.

The demand for boilers and engines has improved slightly. There is, however, still room for a considerable betterment in the demand, particularly for the medium sizes. Second-hand boilers and engines have sold well, except in the smaller sizes, which are largely being replaced by gas and gasoline engines, for which there has been quite an active demand. There is also a good demand for second-hand machine tools, a number of buyers who under normal conditions of delivery would have purchased new tools having been compelled to buy second-hand ones to serve their immediate needs.

There has been practically no change in the foreign demand. In some lines it continues active, while in others the opposite conditions prevail. A fairly even demand for specialties of various classes continues, but that for the general line of standard machine tools is weak.

The foundry trades are very active. More business is being offered for steel, gray iron and malleable castings than can be conveniently handled. Steel and malleable castings can scarcely be had, except on long delivery, and while gray iron castings can be had more promptly the volume of business offered in this branch of the trade is very large. Nearly all the gray iron plants are now running at their full capacity and in a few instances are considerably behind in deliveries. Most of the foundries have covered their needs in both fuel and raw material, in view of a possible coal strike, and could continue uninterruptedly for months ahead should such a strike be declared.

The Baltimore & Ohio Railroad Company has awarded the contract for the construction of improvements at the east side terminal yards in this city to Roydhouse, Arey & Co. The expenditure will involve over \$500,000, and the improvements will occupy property bounded by Moore, Jackson, Thirty-sixth streets and the Schuylkill River. The east side terminal yard will be enlarged, and a large amount of track laid to facilitate handling of their rapidly increasing business. The buildings to be erected include a machine shop, blacksmith shop, with engine and boiler room, round



house, turn table, store houses, water tanks and a number of smaller buildings. Considerable equipment from the present shops will be transferred to the new buildings, although a large amount of new equipment will be required, as considerable repair work will be done at the new shops.

Roydhouse, Arey & Co. and Doyle & Doak have plans from Sterns & Silverman, architects and engineers, for a two-story brick power house to be built at Westville, N. J., for the new trolley road of the West Jersey & Seashore Railroad from Camden to Atlantic City. The building will measure 127 x 139 feet. The major portion of the equipment for the power plant has already been placed.

The Warner Company, manufacturer of gas and electric fixtures, has had plans prepared and expects to place a contract shortly for a two-story factory building, 32 x 75 feet, at 227 and 229 South Sixth street, for manufacturing the above lines. While a large portion of the present machinery will be transferred to the new factory when completed, the company will also be in the market for a considerable amount of new equipment. The new plant is expected to triple the present capacity of the works.

The Hess Machine Works has shipped 12 sets of its latest design of file making machinery to Japan, and has orders for two more sets for export to different parties in the same country. Shipments have also been made to France, Germany and Russia, and orders for eight additional sets of machinery are in hand for export to France. Both the foreign and domestic demands for its file making machines continue to increase and all departments of the plant are fully occupied with the orders in hand.

I. H. Johnson, Jr., & Co., Incorporated, have recently shipped several very heavy lathes, weighing well over 100,000 pounds each, to several customers. The demand lately has been running largely to lathes of the heavier types, sales of the medium and smaller sizes not being so extensive as some time ago. All departments of the plant are being operated to their full capacity, and orders on hand are sufficient to keep them so occupied for some months ahead. A number of lathes of the larger type, as well as some of the medium sizes, have been shipped to large steel plants, as well as other customers in both the East and Middle West.

Wickes Brothers Company, through its local office, reports a very good demand for air compressors and other lines of machinery. Inquiries have been numerous recently and the past month's business has increased materially over that of the previous one. A 14 x 15 x 14 straight line air compressor was furnished the Longdale Iron Company, Glen Wilton, Va., and a 20 x 20 x 30 straight line compressor was sold the American Tube & Stamping Company, Bridgeport, Conn. Several others have also been furnished nearby concerns, while a number of engines of different types have been sold both local and out of town parties.

The Energy Elevator Company has had a largely increased demand for elevators, both from local and from out of town customers, and particularly for those of the electric and power freight types. Large ones of the latter type are to be installed for Schuylkill Haven and Chester parties, while electric freight elevators are to be installed for the Great Bear Spring Water Company and several other local concerns. A hand passenger elevator is also to be furnished to Wilmington, Del., parties, while freight elevators of varying capacities have among others been shipped to Fitchburg, Mass.; Shelbyville, Tenn.; Rochester, N. Y.; Marysville, Cal.; Altoona, Pa.; Geneve, Ala.; Toledo, Ohio, and Hardwick, Vt.

## Chicago Machinery Market.

CHICAGO, ILL., April 17, 1906.

Purchases of tools and equipment by Western railroads will temporarily be curtailed on account of the coal strike, which has already affected gross earnings very materially. A portion of the list promulgated by the Frisco System is being indefinitely held up and no contracts will be awarded until the strike situation has cleared. The Great Northern is now in the market for a large number of tools and the Northern Pacific has issued specifications for a small lot. The machinery requirements for the new shops of the Wabash Railroad at Decatur, Ill., will be purchased at St. Louis, but as yet no awards have been made. At West Milwaukee the Chicago, Milwaukee & St. Paul Railroad is extending its car shops and facilities will be provided for manufacturing 25 cars daily as compared with ten, the present output. There is no abatement in the demand for individual tools by industrial plants throughout the West, and equipment from stock in several instances has been sold at slight premiums to insure immediate shipment. Desirable second-hand machinery is scarce and the asking prices are only a trifle below those prevailing for new. Machine tool builders continue behind on deliveries and in few cases can shipment be made before July 1. The advances which became effective the first of the year are being rigidly maintained and some of the manufacturers are considering still higher quotations. Stocks carried by local dealers are at a low ebb and no relief from the difficulties experienced in secur-

ing deliveries from the manufacturers is in sight during the next three months at least.

The National Car Coupler Company, Chicago, has submitted plans and specifications to contractors for the erection of a new open hearth steel foundry plant at Attica, Ind., where the company recently purchased a 7-acre tract of land, lying between the Chicago & Eastern Illinois and the Wabash railroads. The main building will be 130 x 300 feet. Several other buildings will be erected, including office, pattern storage, pattern shop, gas producing house, &c. The company is in the market for a number of modern machines, including a 125-kw. generator, one 5-ton traveling crane, several individual motors and other equipment. The plant, including equipment, which the company now operates at Converse, Ind., will be removed to Attica and the machinery installed in the new plant at the latter place. The company manufactures car couplers, freight and passenger emergency knuckles, centering yokes, steel platforms and draft rigging. The main offices of the company will be maintained in the Monadnock Building, Chicago. The officers are W. J. Harrison, president and general manager; H. L. Bailey, vice-president; Chas. A. Nowak, treasurer; C. L. Cayton, secretary.

The Toledo Interurban Construction Company, Toledo, Ohio, is in the market for the following equipment, which will be installed in shops at Port Clinton, Ohio: Lathe for wheels and axles, 40-inch swing; lathe, 24-inch swing; planer, 22 x 22 x 5 feet; drill press, and wheel press for 36-inch wheels.

Some machinery will be purchased by the Reliable Foundry Company, Quincy, Ill., which has recently acquired and will improve the plant of the Gibson Heater Company, Ft. Madison, Iowa. The requirements include a second-hand boring mill with single head, capable of swinging at least 48 inches, and a column lathe to swing at least 36 inches, and 22 feet between centers. It is also possible that three motors will be purchased and other equipment of a miscellaneous character.

The Aermotor Company, Chicago, is building a new foundry to replace its present casting shop, which is inadequate to meet its constantly increasing requirements. The building will be 100 x 200 feet and will contain the two cupolas now in the old plant. Very little new machinery is to be purchased, as the equipment now in use will be transferred to the new building.

The West Side Power, Light & Heat Company, St. Paul, Minn., is erecting a new steam power plant and is in the market for cranes, heaters, pumps, condensers and piping. Claussen, Burch & Pillsbury, Minneapolis and St. Paul, prepared the plans.

The Chicago Flexible Shaft Company, Chicago, is erecting an eight-story building adjoining its present factory which will be 45 x 100 feet. It will be devoted to the manufacture of flexible shafts and gas furnaces. A portion of the equipment which will be installed has been purchased.

The Smith Machine Company, Milwaukee, Wis., will build a new machine shop, 100 x 260 feet, on property recently purchased. Some new machinery will be installed.

The Henry Vogt Machine Company, Louisville, Ky., is in the market for a 10-foot vertical boring and turning mill for installing in its machine shop.

The Pfannmueller Engineering Company, Chicago, has incorporated to do a general engineering and contracting business. The company organized by the election of the following officers: F. E. Pfannmueller, president; S. D. Boynton, M.E., vice-president and consulting engineer, and E. M. Mills, secretary and treasurer. A specialty will be made of designing and installing complete power plants. The company is capitalized at \$30,000 and will occupy offices at 1134 First National Bank Building, Chicago.

Oklahoma City, Okla., will receive bids until April 24 on equipment for a water works plant, which will include three 200 horse-power water tube boilers, with stokers, and one 6,000,000-gallon and one 4,000,000-gallon pump.

The Power & Mining Machinery Company, Milwaukee, Wis., has opened a branch office in Columbus, Ohio. The office is located in 700 and 701 Columbus Savings & Trust Building, with William A. Heartt in charge as district manager.

## New England Machinery Market.

WORCESTER, MASS., April 17, 1906.

Machine tool builders in not a few instances are eking out their supply of labor by working their regular men a few extra hours a week, and shop forces are being increased in efficient productiveness as more men are broken in in the effort to make up for the lack of skilled labor. Some very good results are reported from the striving, impelled by necessity, to produce capable workmen out of raw material; in other words, training comparatively green men to do the work of specialists. As a result of the spur of unprecedented demand for machine tools the shops are increasing their capacity quite materially, and those employers who are enlarging their plants look more hopefully at the prospect of securing the workmen with which to man them. The demand for machine tools has not fallen off in any respect, so far as can

be learned. Occasionally a manufacturer finds his inquiries dropping off from the usual number and augurs from this fact that there is a slight cessation of activity among buyers, but invariably the inquiries return to their old proportions in number and results. The same thing is true among the dealers. One week some of them will state that business has rather fallen off, but the next week finds them as worried as ever over deliveries, which worry comes with a lot of good business.

The American Waltham Watch Company, Waltham, Mass., is planning to make extensive additions to its plant this season. The completed plans are much greater in their scope than those mentioned recently in this report. The purchase of a considerable tract of land adjacent to the company's property has made these larger additions possible. A corridor building, five or six stories high, 40 x 110 feet, similar to the two buildings of the same type already existing, will be erected. The factory front will be extended by a wing 180 feet long, which will permit of two additional wings, each 200 feet long. These buildings will all be five stories. The company is also increasing its main power plant, the purpose being to convert it into a central station from which power will be conveyed electrically to all parts of the works. At present about two-thirds of the large plant is operated by electric power. Two electric generating sets of 500 kw. each have been ordered of the Westinghouse Company to provide the necessary capacity.

The Monarch Tool Company, Stamford, Conn., which was recently incorporated for the manufacture of mechanics' fine tools, builders' hardware and other specialties, including a universal center test indicator, intends to erect a new three-story plant which will be fully equipped with modern machinery and will give employment to about 200 men. The company will require engine lathes, planers, shapers, milling machines, drill presses, blanking presses, emery wheel grinders, universal grinders, smiths' forges, hardening furnaces, drop forging machinery, stationary engines and boilers. The officers are J. E. Allcott, president; E. Everett Rowell, vice-president; H. B. Lanyon, secretary and treasurer, who with P. I. Hoffman and C. G. Macey constitute the Board of Directors.

The New London Marine & Iron Works, New London, Conn., has been organized to take over the plant and business of the Morgan Iron Works of that city and property adjoining the iron works on the upper harbor front. It is a new Connecticut corporation, with a working capital of \$350,000. The officers are men conspicuous in their several lines, as follows: President, Charles E. Hyde, recently of the Bath Iron Works, Bath, Maine; vice-president, Morton F. Plant, Groton, Conn., of the Plant line of steamships; treasurer, P. Leroy Harwood, New London; directors, these officers and former Governor Thomas M. Waller, New London; John Alvin Young, vice-president Winsor Trust Company, New York, and Charles A. Worthington, Hartford, of William Salamon & Co., New York. The new owners will immediately enlarge the plant of the Morgan Iron Works, putting it in condition to do all classes of marine repairing and shipbuilding. Plans for the additions have not yet been worked out, but they will include a marine railway capable of taking vessels up to 300 feet in length. Later on the company will be in the market for a considerable amount of new equipment, including overhead traveling cranes and some machine tools. The present power plant will be sufficient for the present. The Morgan Iron Works is an old established business and under the new owners the plant promises to become an important one.

It is reported that the Boston & Maine Railroad proposes to equip the main line of the Eastern division between Boston and Salem with electric power.

The South Norwalk Flanged Fittings Corporation has been incorporated under New Jersey laws to take over the business and plant of the United States Foundry & Sales Company, iron founder, machinist and engineer, South Norwalk, Conn. It is planned to extend the plant at South Norwalk, \$80,000 being provided under the reorganization of the business for improvements, including new construction and machinery. A large machine shop will be erected and equipped with facilities for producing flange fittings, pipe threading and bending, and gate valves. The capital stock of the new corporation is \$600,000. The officers are: President and manager, J. A. Richardson, South Norwalk; secretary, David E. Disbrow, South Norwalk; treasurer, Jacob W. Layton, South Norwalk; directors, J. A. Richardson and Jacob M. Layton, South Norwalk; Louis B. Dailey, Jersey City; George A. Hurd and Stephenson Bixby, New York. The United States Foundry & Sales Company will continue the business as usual until the new corporation has paid over to it the sum of \$75,000 in cash and \$300,000 in stock of the new company.

The city of Pawtucket, R. I., has appropriated \$300,000 for the consolidation of its pumping stations at No. 1 station, which will be increased by the installation of new pumping engines of 15,000,000 gallons capacity. The stations at Cumberland, known as Nos. 2 and 3, will be abandoned.

A. C. Blanchard and L. J. Clossey, Montpelier, Vt., have organized the Blanchard & Clossey Pneumatic Tool Company to manufacture the Clossey pneumatic hammer, surface

grinding machines, both large and small; a plug drill and a carving tool, for working stone. The company has taken the shop on Winooski avenue, Montpelier, formerly occupied by the Colby Wringer Company. The shop is nearly equipped and manufacturing for the market will begin immediately.

The business of Peck, Clark & Co., manufacturers of forks, rakes and cant hooks, Brookfield, Vt., has been acquired by F. A. Fogg and E. E. Jones, Enfield, N. H., who will operate the plant under the name of the Peck-Clark Company. Improvements will be made and the line of product will be extended. The new owners state that they will put in a new press and hammers as soon as they can get to it.

The Fairbanks Company is enlarging its Boston store, at 42 Pearl street, having taken the adjacent store, which will double the size of the already commodious quarters.

The Page Mfg. Company, New Bedford, Mass., which will make textiles, is buying a few machine tools for its repair shop. A machine shop, boiler and engine house will be built in connection with a new mill.

The Briggs Iron Works, Springfield, Mass., which was organized last year to manufacture gray iron castings, has decided to discontinue the business, and has leased its foundry for six months to the Springfield Foundry Company.

Hincks & Johnson, Bridgeport, Conn., carriage manufacturers, report that the damage resulting from their recent fire was much exaggerated, only the body room and paint shop being damaged. The machine shops and other machine rooms escaped.

The Bantam Anti-Friction Company, Bantam, Conn., has increased its capital stock from \$50,000 to \$100,000. The new capital will be devoted to increasing the company's plant and extending its business.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, April 17, 1906.

The week's business in machine tools has been up to the standard and considerable new work was booked. There is almost an utter absence of anything along specialized lines, the most of the trade being of a character that admits of no particular mention. Not for years, and probably never, has there been such a general all around demand as there is at the present time, and manufacturers are using might and main to fill orders in such a manner that new trade will not pass them by. This does not appear to be applicable to any particular line of tools, but throughout the whole list the circumstances are the same. Foreign demand is keeping well to the front and enters very largely into the sum total of trade requirements.

There is some trouble existing between the structural iron workers and employers, but which promises to be of short duration. The last agreement entered into was for two years and there appears to be some difference of opinion as to the exact grievance. It is claimed that the men demand an increase from 40 to 50 cents per hour, which in one or two cases was met by the employers. Several firms are holding out, but it is expected a conclusion will have been reached by the latter part of the week. This occasions some delay in the new buildings that are now being erected throughout the city, although several of the larger structures were beyond the critical stage when this action was taken and are being hurried to completion.

Several large lines of expansion along public utility lines are to be noted, among which we mention that of the Cincinnati Gas & Electric Company. This company has leased to the Consolidated Gas & Electric Company all its plants and the latter company will in the near future begin the erection of a very large plant on the banks of the Ohio River, which will, it is said, have about double the capacity of the present plant. The machinery will all be new and consist of two turbine engines of 18,000 kw. capacity, each with the necessary pumps, boilers, and in fact a complete power plant of the latest design and greatest efficiency obtainable.

The Globe Wernicke Company, whose plant at Norwood is a model in its line, is about to add a new boiler and engine house, 75 x 90 feet. New boilers and engines will be purchased and a complete power plant is to be installed, which will be practically double the size of the present one.

The R. K. LeBlond Machine Tool Company has had in contemplation for some time the addition of several wings to its present buildings, this move being found absolutely imperative to take care of a rapidly growing trade. Plans are now being projected to this end and arrangements are being made to carry them into effect. The company has found it necessary in the past year to utilize a portion of its storage warehouse for the manufacture of tools, and matters are again becoming congested to such an extent that another move is deemed advisable. Trade is reported to be excellent from both foreign and domestic sources.

Work on the L. Schreiber Sons Company's plant at Norwood is progressing in a fairly satisfactory manner, although there has been some delay on account of the trouble with the structural workers. This company has for several years



been operating a portion of its plant at this point, the new addition being for work along ornamental lines only.

The National Machinery Company, Tiffin, Ohio, is experiencing an almost unprecedented run of orders for bolt, nut and wire nail machines. Trade along this line of machinery appears to have doubled itself during the past year or two, and the company is crowded with work. Deliveries are somewhat delayed as along other lines, but extra efforts are being made to overcome this trouble.

The Cincinnati Machine Tool Company has added much new business to its order books the past two weeks. The entire floor space of the large shop is now being utilized, and a rearrangement of tools made, with several additions. This company is now able to take care of considerably more business than was the case a year since.

## Cleveland Machinery Market.

CLEVELAND, OHIO, April 17, 1906.

Dealers say there is somewhat of an improvement in business. The fear of a coal strike no longer troubles local manufacturers, and the talk of a possibility of another machinists' strike has died out and is no longer feared, so that these two discouraging elements have been eliminated. Automobile builders continue to furnish a lot of interesting inquiries for machinery to be delivered about September, and they are also placing orders for a few individual tools for immediate delivery. The tremendous growth of this business and the success experienced by the majority of larger makers is responsible for an influx of a lot of new companies, the majority of them small concerns located in small towns, who believe they can make money by assembling a few machines. This business is on a par with the people who made a business of assembling bicycles some years ago, and as it takes a lot more capital to assemble automobiles than it did bicycles, the machinery dealers are somewhat wary about the credits and stability of the majority of these companies.

The American Shipbuilding Company has been purchasing considerable new machinery for its new additions at its Lorain yards. Last week it purchased a number of punches, shears, bending rolls and other boiler shop machinery from Manning, Maxwell & Moore.

Cleveland people are interested in the Ohio Shovel & Stampings Company, incorporated this week with \$100,000 capital stock. The company has organized with the following officers: O. C. Eben, Toledo, president and general manager; D. Defenbacher, Canal Dover, Ohio, vice-president, and A. M. May, Cleveland, secretary-treasurer. Mr. May was formerly at the head of the Reliance Machine Tool Company of this city, which sold out a few weeks ago to Foot, Burt & Co. The new company has acquired the plant and business of the Toledo Stamping Company, Toledo, and it will remove it in about 60 days to Canal Dover, Ohio, the company having acquired the large plant in that place which was built for the Standard Motive Power Company. The plant consists of four buildings, respectively 80 x 185 feet, 60 x 100 feet, 40 x 100 feet, and two stories high, and an office building, 40 x 100 feet, two stories high. Boilers are now being purchased for the power plant, which will be about all the machinery that will be required for the present, although a little later, after the company is settled, some more presses may be purchased. The company will manufacture shovels and stampings and it has a large amount of business on hand.

The Bostwick Steel Lath Company, Niles, Ohio, is preparing to make important improvements to its plant. New buildings will be erected and machinery installed which will probably double the present capacity of the plant.

The Akron Sells Company, Akron, Ohio, has purchased the plant and business of the National Gear Company at Ravenna and will remove the plant to Akron, where a new building is to be erected to take care of the new department, also to take care of the increasing business of the old company.

The Cleveland & Southwestern Traction Company, Cleveland, will shortly place contracts for two 500 horse-power boilers to be installed in its main power station at Elyria, Ohio.

John F. Craig of Toledo, formerly prominently identified with the Craig Shipbuilding Company of that city, admits the truth of the newspaper reports that himself, his brother, George L. Craig, and his father, John Craig, will be at the head of a new company formed to build ocean vessels. There will be two shipbuilding yards, one on the Atlantic Coast and the other on the Pacific Coast. The former will be built and managed by George L. Craig, while the latter will be built and operated by John F. Craig, and the whole Craig family will be financially interested in both. Several cities on the Pacific Coast are being considered for the Western plant, which will be built first. The Craig Company at its Toledo plant built 11 vessels which are now in use in the coast trade of the Pacific.

The Swinehart Clincher Tire & Rubber Company of Akron has doubled its capital stock, and will spend \$100,000 in enlarging its plant. A considerable amount of rub-

ber and iron working machinery will be installed, and the power equipment will be increased.

The New York, Chicago & St. Louis Railroad Company, Cleveland, is planning to erect a freight car repair shop at Conneaut, Ohio. The building will be 90 x 420 feet, and will accommodate 52 freight cars. Another shop will be erected by the same company at Stoney Island, near Chicago. It will be a wood working shop, used in fitting up timbers for car repairs. The building will be 50 x 150 feet.

The Chicago office, Monadnock Building, of the Browning Engineering Company, Cleveland, Ohio, has been placed under the management of W. H. Waite, and the St. Louis office, Fullerton Building, has been placed in charge of F. M. Fish.

We have received from the Vulcan Iron Works, Seattle, Wash., a self winding tape measure. It is inclosed in a decorated celluloid case, bearing a statement of the lines dealt in by the company—namely, pipe, iron, steel supplies, machinery, coal and coke.

## Government Purchases.

WASHINGTON, D. C., April 17, 1906.

The Isthmian Canal Commission will soon ask bids for a quantity of new machinery, including one back geared hollow spindle 12-inch engine lathe, with 10-foot bed; one 24-inch slotter, one 42-inch triple geared engine lathe, one 200-ton hydraulic wheel press, six duplex piston feed pumps, two floor grinders, six carborundum wheels, one 6 to 7 ton foundry cupola, one double vertical surface planer to plane lumber 22 inches wide and 6 inches thick.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until May 1 for a quantity of supplies for the Portsmouth, Boston, Newport, New York, League Island, Washington and Norfolk navy yards, including pneumatic drills, drill presses, &c.

The Bureau of Supplies and Accounts will receive bids until May 22 to furnish at the Mare Island Navy Yard one 250 horse-power propelling engine, one 10 horse-power pumping engine and one fire and bilge pump for launch.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until May 8 to furnish at the Portsmouth Navy Yard two four-cylinder four-cycle self starting vertical gasoline marine engines of 100 brake horse-power and accessories for barge.

The following bids were opened April 10 for supplies for the navy yards:

Bidder 97, Handlan-Buck Mfg. Company, St. Louis, Mo.; 112, Harron, Rickard & McCone, San Francisco, Cal.; 113, Henshaw, Buckley & Co., San Francisco, Cal.; 130, J. B. Kendall, Washington, D. C.; 146, Manhattan Supply Company, New York; 147, Montgomery & Co., New York; 148, Manning, Maxwell & Moore, New York; 193, H. A. Rogers Company, New York; 199, J. P. Roache, New York; 216, Sherman-Brown-Clements Company, New York; 224, Sanson & Rowland, New York; 233, George C. Thomas, New York; 242, Vermilye & Power, New York.

### Schedule No. 417.

Class 31. Two self feeding rip saw tables—Bidder 97, \$2830; 112, \$2343; 113, \$2896.

Class 32. One shears, No. 6—Bidder 113, \$195; 148, \$174.50; 193, \$190; 233, \$222.

### Schedule No. 433.

Class 95. Two 30-ton hydraulic lifting jacks—Bidder 130, \$178.50; 146, \$219.40; 147, \$194; 148, \$105.72; 193, \$213.50; 199, \$191.24; 216, \$168; 224, \$200; 242, \$115.50.

### Schedule No. 434.

Class 133. One buffing lathe for two wheels—Bidder 146, \$29.

### Schedule No. 435.

Class 166. One boiler test pump—Bidder 146, \$123; 147, \$118; 148, \$65.

The following bids were opened April 12 for three steam shovels for the Isthmian Canal Commission:

Vulcan Iron Works, Toledo, Ohio, \$25,000, f.o.b. New York. Can ship the same before April 20 and May 20. One shovel on hand.

Atlantic Equipment Company, New York, \$8750 each, f.o.b. New York; \$9250 each, dock Colon or La Boca. Delivery, 225 days.

Bucyrus Company, South Milwaukee, Wis., \$7200 each, f.o.b. New York; \$7450 each, dock Colon. Delivery, entire, during June, 1906.

Marion Steam Shovel Company, Marion, Ohio, on company's specifications of model 20, on railroad trucks, f.o.b. Marion, Ohio, \$5600; on traction wheels without railroad trucks, \$6200; where both sets of trucks are furnished, \$6800; freight and boxing, f.o.b. New York, \$300 on each machine; three models No. 20, f.o.b. New York, \$5900 each on railroad trucks; \$6500 each on traction wheels; \$7100 each if both traction and railroad wheels are wanted. The proposition covers the machines with steel house, steel boom and steel dipper handles, but does not cover men for

assembling and for trial in Panama. Delivery during first half of July, 1906.

Evans, Almirall & Co., New York, have been awarded the contract for the machinery for the power plant at the New York Navy Yard at their bid of \$116,295. Sterling boilers, Foster superheaters and Roney stokers are to be furnished.

The Westinghouse Machine Company, Pittsburgh, has been awarded the contract for two 750-kw. turbo alternators for the New York Navy Yard at its bid of \$40,732.

Under bids opened February 6 for supplies for the navy yards the Handlan-Buck Mfg. Company, St. Louis, Mo., has been awarded class 18, one double headed motor driven pedestal grinder and polisher, \$255, and Cutter, Wood & Stephens Company, Boston, Mass., class 19, one nickel plating plant, with supplementary outfit for copper plating, \$786.08.

Under bids opened March 27 for supplies for the navy yards the Handlan-Buck Mfg. Company, St. Louis, Mo., has been awarded class 15, one hand punch, \$60.

The following awards have been made for supplies for the navy yards, bids for which were opened April 3:

Wellman-Seaver-Morgan Company, Cleveland, Ohio, class 22, one locomotive gantry crane, \$16,600.

Snow Steam Pump Works, New York, class 273, one pressure pump, \$683.25.

M. I. Davidson, Brooklyn, N. Y., class 274, 14 steam launch pumps, \$630.

## Trade Publications.

**Machinery and Tools.**—Brown & Sharpe Mfg. Company, Providence, R. I. 1906 catalogue. Size, 3 3/4 x 5 1/4 inches; pages, 514. The company's widely diversified lines of machine tools and fixtures, cutters, small tools and other products are listed in the usual detail, and a very complete index is given. The book is divided into two parts, the first concerning machine tools and the second small tools. The catalogue shows no material additions to the lines of machines and tools, but some changes in dimensions and designs are noted. Special attention is called to important new features in the milling machines. All universal machines, together with corresponding sizes of plain milling machines, are fitted with positive feeds, chain driven; steel arms, clamped with one lever, and telescopic elevating screw. The spiral head has been improved, including provision for plain or rapid indexing without throwing the worm and wheel out of mesh. Attention is also called to the addition to the line of automatic gear cutters, of a No. 12 machine, presenting new features in this type of tool, including a constant speed main drive and a mechanism making the cutter speeds and spindle speeds independent and obtained by manipulating index slides and levers.

**Feed Water Heaters and Expansion Joints.**—Alberger Condenser Company, 95 Liberty street, New York. Catalogue No. 6. Size, 6 x 9 inches; pages, 36. Especially devoted to the Wainwright even flow feed water heaters, steam tube heaters, heat exchangers and expansion joints, and also contains illustrations of a barometric and a surface condenser, centrifugal pump, cooling towers, vacuum pump and pumping engines. A general description of the operation of the Wainwright heater and a discussion of its details of construction are given, with numerous views of sections and parts. The heaters are made in horizontal and vertical patterns, ranging in horse-power capacity from 50 to 5000. Dimension tables of the two patterns are given. Short descriptions are given of the Wainwright steam tube feed heaters and the Wainwright heat extractor for compressed air, oil, gas, steam or water.

**Steel Castings.**—Scullin-Gallagher Iron & Steel Company, St. Louis, Mo. Catalogue; size, 9 1/4 x 6 inches; pages, 52. Contains illustrations of steel castings for car service; for steam, hydraulic and pneumatic riveter frames, cast steel engine frames, slag pots, refining kettles, steel gears and other samples of work. An introduction is devoted to a description of the company's new works, which is followed by a folded insert of a ground plan of the plant.

**Hydraulic Jacks.**—Watson-Stillman Company, 46 Dey street, New York. Catalogue No. 68. Size, 6 x 9 inches; pages, 91. Contains an assortment of sheets selected from over 600 pages of the company's printed matter, these especially relating to hydraulic jacks. The last catalogue on the same subject, No. 61, is superseded by the present issue, to which have been added a number of new sizes. Among the entirely new things shown are a low type journal box hydraulic jack; pipe pulling ring, wedges and faces; a bridge transfer hydraulic jack, and a jack repair vise. Several of the pages are new to the jack catalogue, but have appeared in catalogue No. 66. An index of the whole 600 sheets is appended, and a few pages at the back of the catalogue refer briefly to the contents of catalogues of other numbers.

**Mining Machinery.**—The Jeffrey Mfg. Company, Columbus, Ohio. Bulletin No. 11. Size, 8 x 10 inches; pages, 44. The subject matter is a profusely illustrated article on the application of electricity to mining, by F. L. Sessions. The illustrations show in operation electric gathering locomotives, coal mining machines; traction locomotives (storage battery and

trolley type); various types of chain coal mining machines and shearing machines, drum hoists, pumps, &c. Power plant equipment for mines is another subject illustrated, and air power drills are shown in a few patterns.

**Direct Current Generators.**—Crocker-Wheeler Company, Ampere, N. J. Bulletin No. 63, superseding first supplement to bulletin No. 43. Contains a list of direct current engine type generators now in use or ordered from the company.

**Steel Cars.**—Ohio Ceramic Engineering Company, Cleveland, Ohio. Catalogue. Size, 6 x 9 inches; pages, 72. Illustrates the standard types of cars manufactured by the company, and a few examples of special designs, in which the company does an extensive business. The cars are entirely of steel except the wheels and bearings, which are cast iron, the main points being strength, rigidity, lightness and ease of running. The classes of cars shown include brick dryer cars and special cars. Details are given of wheels, axles, track gauge, bearings, framework, &c. Flat, double deck and triple deck cars are shown, and various rack cars. The parts illustrated include turntables and transfers. Among the special cars are shown side dump cars, end dump cars, core oven trucks, warehouse trucks, &c.

**Steam Engines and Boilers.**—English Iron Works Company, Kansas City, Mo. Catalogue H. Size, 6 x 9 inches; pages, 54. Gives illustrations, specifications and a brief description of several types of engines and boilers. Among the newest patterns shown are the Samson automatic and plain engines. The automatic engines are made in sizes from 8 to 66 horse-power, in single cylinder form, self contained or with outboard bearings. Plain engines are made in center and side crank patterns. A line of vertical engines is also shown, and portable outfits, consisting of boilers and engines. Steam driven hoisting sets occupy a considerable part of the book. The remainder deals with horizontal tubular boilers, stationary pattern, and parts of furnaces, such as grate bars, fronts, &c. These are followed by a number of portable boilers of horizontal and vertical pattern. The last few pages deal with a counter current feed water heater and the Cookson feed water heater and purifier; also boiler feed pumps, steam pumps and injectors.

**Projectile Manufacture.**—Gisholt Machine Company, Madison, Wis. Loose leaf for catalogue. Deals with the making of projectiles, showing the first and second operations on Gisholt turret lathes.

**Fan Motors.**—Emerson Electric Mfg. Company, St. Louis, Mo. Two catalogues. No. 4200 deals with Emerson fans for alternating currents, showing the latest patterns for desk and bracket mounting and ceiling and floor column types. A few pages deal with Emerson exhaust fans. Catalogue No. 4220 deals with Trojan fans for alternating currents, made in desk and wall bracket and ceiling and floor stand types. In both catalogues specifications and dimensions are given of the various patterns.

**Variable Speed Motors.**—Lincoln Electric Mfg. Company, Schofield Building, Cleveland, Ohio. Bulletins Nos. 3 and 4. The first describes the Lincoln variable speed motor, which is capable of speed ranges up to ten to one and is used on ordinary two-wire direct current circuits without a controller, and illustrates its application to the driving of a lathe and a shaper. The second bulletin gives sizes, dimensions, speeds and price-list of the motors, and shows one applied to a universal milling machine.

**Incandescent Lamps.**—Westinghouse Electric & Mfg. Company, Pittsburgh, Pa. Publication 4002. Covers the standard line of incandescent lamps made by the Sawyer-Man Electric Company. These include the common form of lamp made in from 2 to 50 candle-power for voltages of 90 to 130, 190 to 250, 45 to 60, and mill type, round bulb, tubular, lumino, reflector, railway, street series, miniature, frosted and colored lamps.

**Machinery and Supplies.**—The Mine & Smelter Supply Company, Denver, Col. Catalogue No. 15. Size, 7 x 10 1/2 inches; pages, 891. Cloth bound. This catalogue is very comprehensive, embracing almost all kinds of machinery and kindred supplies. It is divided into ten sections, each a catalogue in itself of the line or lines treated therein, and covers the products of representative manufacturers. Section 1 deals with engines, boilers and feed water heaters; 2, with hoisting engines; 3, with pumps, water wheels and hydraulic machinery; 4, with mining, milling and smelting machinery; 5, with tools and supplies; 6, with assayers' supplies; 7, with electrical machinery; 8, with iron and wood working machinery; 9 contains ready reference tables and useful information and 10 a very complete alphabetical index. With the catalogue were received a number of supplementary bulletins. No. 1 deals with the Dimmick classifier; No. 6, with the No. 5 Wilfley concentrator; No. 8, with the No. 2 Wilfley slime table; No. 11, with copper converting machinery; No. 12, with smelting machinery, and a catalogue, including Bulletin No. 7, deals with the De Remer water wheel, made by the De Remer Water Wheel Company, Denver, Col.

**Electrical Apparatus.**—General Electric Company, Schenectady, N. Y. Bulletins, flyers, &c. Bulletin 4428 deals with arc lighting apparatus; bulletin 4429 with General Electric switchboard instruments, type R; bulletin 4430 with variable speed motors, showing several applications in the driving of machine tools. Flyer No. 2171 shows ceiling rosettes; No. 2172,



types RSF and SF speed controlling rheostats for use with variable speed shunt or compound wound motors, and flyer No. 2173 a seamless outlet box for flush pocket switches and wall receptacles. Publication No. 3368-2 is concerned with household electric devices, such as cooking apparatus, electric flatirons, &c. Price-list No. 5144 lists fan motors.

**Bolt Cutter.**—National Machinery Company, Tiffin, Ohio. Bulletin No. 10. Contains a complete illustrated description of National single bolt cutters, showing samples of the work, details of the construction and general views of the several sizes, with dimension table.

**Lathes.**—The Lodge & Shipley Machine Tool Company, Cincinnati, Ohio. Catalogue. Size, 6 x 9 inches; pages, 98. This is an unusually complete catalogue, devoted to the company's specialty—lathes. The forepart gives an interesting sketch of the company's plant. Thereafter follows a very exhaustive description of the details and features of the company's lathes, treating of the head stock and its parts in detail, and similarly of the apron, tool rest, feeding mechanism, tail stock, counter-shaft and various accessories. Following this general description there is an engraving and table of specifications and dimensions of each of the several sizes. Engine lathes are made in 14, 16, 18, 20, 22, 24, 27, 30, 36, 42 and 48 inch patterns; turret chucking lathes, extra heavy screw machines and turret engine lathes in 24-inch size. A description is then given of a patent head lathe made in 14, 16, 18, 20, 22, 24, 27, 30 and 36 inch sizes. Massive triple geared patent head lathes are made in 36, 42 and 48 inch sizes. The latter part of the catalogue deals with accessories, including taper attachment, turret on shears, raise and fall rest, follower rest, draw in chuck, collet, &c. An appendix deals with electrically driven lathes, illustrating several applications.

**Pumps and Condensers.**—Heisler Mfg. Company, St. Marys, Ohio. Three bulletins. No. 4 describes the Heisler vertical compensating high duty triple expansion pumping engine; the Heisler induced circulation counter current condenser; the Heisler improved straight line air compressor, and the Heisler horizontal fly wheel pumping engine. No. 5 is on the subject of power pumps and describes in some detail a line of belt driven and electric driven pumps. Bulletin No. 6 contains a discussion of the existing and old forms of condensers, and describes fully the Heisler barometric condenser.

### The Coming Meeting of the Mechanical Engineers.

An attractive programme has been arranged for the semiannual convention of the American Society of Mechanical Engineers, May 1 to 4. The place selected, Chattanooga, Tenn., has much to offer in historical interest and natural beauty, and the several pleasure excursions planned to be taken between and after the professional sessions will doubtless insure a good attendance. The headquarters throughout the meeting will be at the Read House and will be open for registration Tuesday noon, May 1. The professional sessions will be held in the assembly hall of the Read House Tuesday and Wednesday evenings and Wednesday and Thursday mornings.

The papers to be presented are as follows: Report of Committee on Standard Proportions for Machine Screws; Report of Committee Co-operating on Pennsylvania Railroad Locomotive Tests; "Effect of a Blow," by A. W. Moseley and J. L. Bacon; "Low Resistance Thermo-Electric Pyrometer and Compensator," by Wm. H. Bristol; "Manganese Steel," by Henry D. Hibbard; "A History of the Introduction of a System of Shop Management," by James M. Dodge; "Collapsing Pressures of Bessemer Steel Lap-Welded Tubes," by R. T. Stewart; "New Liquid Measuring Apparatus," by George B. Willcox; a number of short papers on water wheel governing, by Mark A. Replogle, George A. Buvinger, John Sturgess, George J. Henry, Jr.; "Efficiency Test of Turbine Water-wheels," by William O. Webber; "The Improvement of the Tennessee River and Power Installation of the Chattanooga and Tennessee River Power Company at Hale's Bar, Tenn.," by Thomas E. Murray.

Outlines of the transportation arrangements for reaching Chattanooga have been distributed to the members. For those in New England and the Eastern States two special trains will be run from New York City, and it is urged that all who can do so will arrange to connect with these trains. The entertainment of the members in Chattanooga will be taken care of by a local committee, of which Newell Sanders is secretary. The latter should be advised by those expecting to attend, that they may be included in the arrangements for receptions and excursions.

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# HARDWARE

THE attention of the trade is perhaps unduly directed to the troubles of the retail merchant, so that his interests and affairs receive more than their proper share of consideration. This is in part owing to the solicitude for his welfare which jobbers and manufacturers are so frank in expressing, the alacrity and fervor with which they evince their desire for his well being, subjecting them indeed to the suspicion that this sympathetic interest is not entirely unrelated to the business they hope to do with him, the orders from him which they hope will be coming their way. There is a suggestion of what approaches the hypocritical or at least a playing to the grandstand in not a little of the public or published utterances of both associations and individuals who look upon the retail merchants as their actual or prospective customers. It is to be feared that not all of what has been said upon even so grave a question as that of the catalogue house is entirely free, here and there at least, from a tinge of insincerity, as made for effect and with a view to influencing business. This complicates the problem before the retail trade, who as self-respecting merchants must refuse to be caught by disingenuous utterances.

At the present time the jobbing trade is exceedingly prosperous, enjoying the fruit of the excellent service they are giving the smaller merchants of the country. The wholesale houses, however, whether covering a narrow or a broad territory, have their own difficulties and problems. Of these troubles each house has those that belong to the field it serves, the handicaps under which it labors and the special form of competition it is required to meet. All these are the common incidents of business, whether in one department of trade or another. Even granting that these are met successfully and mastered there is one condition connected with the jobbing trade which must be a constant source of trial and the subject of not a little serious consideration with a view to discovering the best means of meeting it. We refer to the fact that houses which have grown up in constant relation to a jobber, buying at first practically all their goods from him or from other jobbers, gradually attain to an extent of business which justifies them in sending to the manufacturer the great bulk of their orders. This tendency begins almost imperceptibly, but little by little one line after another is eliminated from the orders placed with the jobbing houses until the connection with the wholesale distributors has become insignificant and unimportant and after a while practically stops altogether. It may speak well for both houses concerned, for the retail merchant that his skill and energy have given substantial reward to his merchandising, and for the jobber that he has taken such good care of his customer. The gradual loss of trade is, however, for the jobber a constant trial, and the cause of sincere regret that pleasant and profitable business relations must not only terminate, but that in not a few cases the younger and smaller house becomes in a local field a real competitor. Many a retail merchant, too, experiences a genuine regret that it is not under the laws of trade feasible for him to continue buying from the middleman goods which can more advantageously be purchased at first hand. Thus while pleasant personal relations continue on either side there is for the jobbing house another diminishing and finally closed account.

For the wholesale houses it is as we have said a constant problem how to meet this tendency and to hold on as long as possible to the trade of these growing retail establishments. While it cannot be said that the relation between the growing retailer and the jobber who served him well during his early years can indefinitely continue, there is a constant effort to give such admirable service and such attractive prices that the inevitable break may be put off as long as possible. Not a few retail merchants indeed in their loyalty to the jobbers continue to buy from them when, if strict business principles were to be put in operation, they would gradually be opening accounts with manufacturers and laying the foundation for a larger and more profitable trade. This attachment, however, does not justify an indefinite continuance of agreeable relations unless they are in accord with the interests of the business. Meanwhile the problem for the jobber is clearly defined. He must in every way within his reach make it to the interests of the retail merchants to stay with him. The attempt to do this is seen in the methods of practically all the important jobbing houses, and the effort is apparently attended with some success. There is, however, at best only a deferring of the evil day when the enterprising and prosperous retail house, developing perhaps into a local jobber, must ultimately break away.

## Condition of Trade.

If April shows a slackening in the movement of business it is in comparatively few lines, the general volume of trade continuing very heavy. The demand from the South is naturally falling off a little at this season, but conditions in that section are very prosperous, and the merchants report excellent business. The near approach to the annual inventory is, however, having its effect on purchases. The activity in building throughout the country is emphasized in the great demand for Tools and Builders' Hardware and Supplies, some of the manufacturers finding that their business is making new records in these departments. There is, too, a marked activity in Bolts, Nuts and several lines of heavy goods, developing something of a scarcity which is indeed so pronounced that some merchants are said to be willing to pay premiums for prompt deliveries. The strength of the market in the matter of prices in several lines is also noticeable.

### Chicago.

The favorable weather which has prevailed throughout the West and Northwest during the past ten days has greatly stimulated trade, and the increased volume of business that is being done by the retail merchants is reflected by the many orders that are being received by the jobbers to hurry shipments. Not only is this true of business recently placed, but all orders closed earlier in the year for spring shipment as well. Manufacturers of Agricultural Implements and Garden Tools are hard pressed for deliveries and jobbers' stocks are continually at a low ebb. Mechanics' Tools are also in big demand, notwithstanding the heavy buying throughout the winter months, and manufacturers' stocks are now moving at an unprecedented rate. The Wire and Cut Nail season is now at its height, and on account of the extensive building operations that are being carried on throughout this section the requirements for the retail trade are heavier than ever before. Axe manufacturers, after a season of low prices, are generally withdrawing quotations and a higher level of values is expected to follow.



Most of the jobbers placed contracts at the low prices that have been prevailing, and the withdrawal of quotations indicates that the manufacturers have all of the business they desire on this basis. As the Implement season, so far as the manufacturer is concerned, is fast coming to a close, requirements of Rivets, Bolts, Washers, Wood Stock, &c., are being curtailed, and no new contracts are being closed at the prices now prevailing. Galvanized Sheets are ruling stronger, as most of the speculative material that has been offered in this market during the past 30 days has been disposed of. Implement makers last week placed large contracts for Steel Bars with the mills at an inside price understood to be \$2 below that named other large consumers and jobbers. The store prices of Iron Bars remain unchanged at 2.10 cents, although the mills are now uniformly quoting on the basis of 1.50 cents, Pittsburgh, equivalent to 1.66½ cents, Chicago.

#### Philadelphia.

**SUPPLER HARDWARE COMPANY.**—We have a good deal of sympathy for the fellow who prefaced his speech in a public meeting by: "Fellow Citizens, what shall I talk about?" and was answered by a deep bass from one of the rear seats: "About 30 seconds, and then sit down." We are obliged to confess that our admiration of the skill evinced by the writers whose semimonthly contributions add so much to the interest of this department is not unmixed with envy, as they seem never at a loss for something of interest to the Hardware fraternity. We have often felt curious to know whether items in these columns ever found readers among the multitude of subscribers outside Hardware limits. We have been surprised to find *The Iron Age* in very unexpected places, and so while articles in this department are directed primarily to the ironmonger, they may even meet the eye of a cloistered clergyman or bond clipping banker. To such a diverse constituency shop talk is not acceptable, and items of local interest are more apt to appeal.

Our city honors itself this week in greeting a most distinguished body of delegates, who come here from all countries where intellect and patriotism are valued, to pay homage to Benjamin Franklin, that patriot postmaster who, although born in another city, had the wisdom early in life to locate in Philadelphia, and whose bones repose in the graveyard across the street from where is now located the magazine which he founded and which publishes more copies in a week than Ben ever turned out during his lifetime.

In contrast with the desire to honor a former citizen, is the action of our citizens, represented by their Committee of Seventy, in beginning legal proceedings for the conviction and punishment of those who have plundered our city in years past. These men, already convicted by public opinion, will be compelled to defend themselves, as already a bill of indictment has been drawn and the forces for one of the greatest legal battles of the time are being marshaled. The final conviction and punishment of these men will greatly help to continue the good results of the reform movement and deter, for a time at least, other attempts to prostitute politics for personal ends.

General business is quite satisfactory, and maintaining the rapid gait of the earlier months, and unless indications deceive, 1906 is going to be the banner year for sales in almost every section of this country.

#### Portland, Oregon.

**FAILING, HAINES & M'CALMAN.**—Homeseekers' rates made by transcontinental lines expiring by limitation has brought an unprecedented rush to the Pacific Northwest the past week. Regular trains running in two and three sections were followed by extras to take care of the travel.

We cannot better sum up the situation on the Pacific Coast than to refer to last week's clearings. From Los Angeles to Spokane the increase ranges from 17 to 54 per cent., showing a prosperous condition hard to equal.

It looks to us here in the Far West that Wall Street in the near future was to reap the whirlwind for seed

sown in an unnatural expansion and boom. The prosperity and business activity enjoyed by every financial center of the country shown by clearings, real estate booms and building operations is keeping money actively engaged at home, instead of being carried in New York for low rates paid on daily balances. The golden flood of life insurance premiums also is at ebb instead of flood-tide, as in the past contributing to the 25 and 30 per cent. call loans that handicap operations in the Street.

We have to announce this week the passing of the firm of Corbett, Failing & Robertson from the jobbing list of Hardware and Plumbing supply houses. The writer has money enough and has disposed of the Hardware line to the firm of Failing, Haines & McCalman—organized for the purpose—and the Plumbing and Steam Fitting supply department to M. L. Kline, formerly of the Gauld-Kline Company of this city. May their relations with *The Iron Age* and its clientele be as pleasant in the future as has been ours in the past.

#### Cleveland.

**THE W. BINGHAM COMPANY.**—The large Hardware manufacturers of this country are growing to be, if they are not already, the largest producers of all kinds of Hardware, mining, milling and manufacturers' supplies of any country on the globe. No nation produces so much of the valuable metals and minerals as does this. The constant and great outpour of this wealth makes and keeps us rich.

The humblest homes now must have not only a Sewing Machine, but a parlor organ or piano, or a Lawn Mower, Refrigerator or Gas Stove. Truly we are wonderfully blessed in our resources of all kinds. We are not only able to pay good liberal wages to the artisan and workman in all branches of trade for the goods that they produce and we consume in this country, but for the surplus we send to foreign countries we pay for production the same wages. Our abundance of wealth leads us to accumulate riches, not so much to save as to spend. To this fact is due the great demand for the large variety of goods which the manufacturers in this country produce.

The factories in this section are all very busy, and although they are producing large quantities of goods they are unable to make any definite promises as to when they can fill the orders now in hand. When you punch up a factory now they simply tell you you will have to sit down and wait a while and take your turn, as they are crowded with orders and are doing the best they can to fill orders in their turn.

Now this is a very happy state of affairs and only confirms what we have said to the dealers heretofore—namely, don't depend upon the factories for shipment, but order your goods from the jobbers who have well assorted stocks of almost all kinds of goods. The jobbers really are in better shape than the manufacturers to supply the trade's wants on general lines of goods "quick." The jobbers having anticipated their wants a long time ago are quite liberally stocked and will make prompt shipment. Trade with the five Cleveland Hardware jobbers at the present time is very large indeed, as the merchants throughout the country appreciate the great assortment of goods that are carried in stock in this city.

Prices for the most part are steady and firm, and there is no disposition on the part of the manufacturers or jobbers to advance the prices, but rather to keep them on an even keel. Everything portends that 1906 will be a corker of a year in the sale of all kinds of Hardware, especially in the building line. The assortments of house trimmings never before so large or so well made or so cheap as at the present time. We refer to the medium and better classes of goods. There is a great deal of cheap trash on the market and it is a shame for any jobber to offer it. It is surprising that some dealers will put such goods on their shelves. They have neither good quality nor good looks; the only thing in their favor is price.

It is no wonder that catalogue houses flourish when a retail dealer will buy this cheap trash and try to

palm it off on the user at the prices they ask. We have seen some of these goods marked to retail at a profit of 100 per cent. Is it any wonder that the people buy goods away from home? A few days ago we came across a cheap Lock Set that two retailers were offering to the user at 45 cents per set, the goods costing the dealers \$2.75 per dozen sets, or 23 cents per set; a poor, miserable Lock Set, not only weak in quality but poor in finish. It is a disgrace for any dealer to offer such a Lock Set as a first-class article.

#### Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—In the language of the weather prophet March came in like a lion and went out like a lamb, not in weather, but in volume of Hardware business. The weather was unusually mild and gentle, the only objection being a little too much rain. The Hardware jobbers in this section were taxed to their utmost to fill orders during the month of March, except for the last few days of the month, when a lessening of the demand was perceptible. Some thought that January, February and March being such heavy months this year April would yield only a light volume, but April is not proving to be a dull month by any means. The orders are coming right along, but of course not so heavily as they did during the preceding months.

While profits are not good the prices are pretty regular, and with the unusually heavy volume of business Hardware jobbers ought to be able to realize a reasonable profit. Collections are good and conditions generally are quite satisfactory.

#### St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—In the Central West the fight is on between winter and spring, with the odds so far in favor of winter. Business seems to be run by hot air motor—when the sun comes out for a day or two orders run into high figures, when we have a few days of rain or cold weather off goes the power.

We continue to receive reports of the horrible condition of the country roads. One correspondent suggests the Government should make it a rule that no farming district should be given rural free delivery until the farmers have put their roads into good condition.

It surely impresses one that some parts of our civilization have developed in advance of others when rural free delivery under Government protection comes to a dead standstill in bad weather on account of hopeless roads in the districts served. We are told letter carriers finding it impossible to use their Wagons have gone on horseback, in other cases even the horses could not pass the roads and the letter carriers have gone on foot. It is reported from one town that on account of the condition of the streets the fire apparatus could not be moved and the citizens stood by helpless and saw an important building burn to the ground.

As a call upon a paternal Government seems to be the modern idea of curing all our ills could not the country districts ask their Congressmen to do something for their roads? We must have about so much rain and snow and so much winter every year. Is it possible that in the country districts the people are satisfied to continue to hibernate during these periods?

The trade has been treated to a vaudeville performance on Axes. Much money has been spent in circulars, in traveling and in long distance telephoning. There has been much talk of "the survival of the fittest" and "wiping the other fellow off the face of the earth;" in fact, a regular "slap stick" performance. The mighty blows on the stuffed personages of the actors have resounded throughout the house, but there seems to be a lack of appreciation, and applause and enthusiasm appear to be wanting on the part of the audience. We very much prefer the stately, lyric drama as presented by the United States Steel Corporation.

The Screen Door situation has been very well handled by the new company. The probabilities are that manufacturers, jobbers and retailers will all do better on Screen Doors this season than for several years past. Naturally, the Continental Company has not been able in one short season to cure all the evils. We must not criticise them for a few shortcomings, but should give

them full credit for the amount of good they have accomplished.

We note the Southern jobbers, at their forthcoming meeting, will discuss with manufacturers the "nature of a contract." From what some manufacturers have said to me I am afraid when certain papers are read there will be some members of the association who will prefer the balmy caresses of spring zephyrs under the shade of neighboring trees.

It might be suggested to our Southern jobbing friends when the manufacturers come at them pretty hard on the "nature of a contract" a good way to get back at the manufacturers would be on the subject of prompt deliveries.

We wonder if at this convention the Manufacturers' Association will give birth to another set of resolutions.

There is one thing, however, about which there is no question—the mint juleps served in the pavillion are *par excellence*.

#### Baltimore.

CARLIN & FULTON.—Though the spring has well advanced trade continues quite active, especially in our nearby section, though orders from the cotton States, as usual at this time of the year, lack the variety of other seasons, being mostly of a filling-in nature and for heavy seasonable goods for current wants.

The favorable weather during the entire winter enabled building operations to be continued without interruption in every section of the country, with the result that manufacturers have found it difficult to execute orders with the promptness that they would like. We have been informed that the sales of one of the largest Building Hardware manufacturers in the trade have so far during the present year exceeded the business of last year for the same length of time by 75 per cent., which seems an enormous increase and is indicative of an immense amount of building in process throughout the United States.

The fears that business done early in the year would curtail later shipments have not been realized, excepting perhaps in a limited area. The prices of Nails and Wire have been kept within moderation by the conservatism of the manufacturers, who have not taken advantage of their opportunities to get much higher figures. The Axe situation seems most peculiar, and while prices which existed during the pool or association were probably in excess of what they should be the reaction after the dissolution of the pool seems to have been just as extreme in the other direction, and now it looks as though the manufacturers would like to see selling prices based on the cost of production rather than fixed by unwise competition and perhaps antagonism.

We see by the papers that the Agricultural Implement still plays its important part in the ethics of our people, and now to "The Man with the Hoe" must be added "The Man with the Muck Rake" in the list of interesting personages for public discussion. From the days of Tubal Cain to the present time the Hardware business has had its share in furnishing the theme for the historian, the essayist and the poet.

#### Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—Business conditions at large seem undisturbed by reports of high money rates in New York and the larger centers. We repeat the conviction that we have expressed before—namely, that money is more widely distributed over our country than ever before; that with the establishment of hundreds of new banks the thousands of dollars which used to flow to the main repository centers for safe keeping are now left in the country to lubricate the wheels of commerce as they go around on the mud roads. In Kentucky, for example, the number of banks has been doubled since 1898—then 284, now 538. Each one of these shows deposits ranging from \$20,000 up to \$100,000. This means that there is not so much sent East for Wall Street to play with.

Prices for mill products are remarkably steady in nearly all lines. There is nothing to tempt the speculator. Supplies are not in excess, so that there is nothing on the other hand to tempt a sacrifice on the part of the



holders. If we have good crops and are not subjected to disaster in the way of epidemic or unseasonable weather we may reasonably look for a continuation of the present era of prosperity. It certainly has been unexcelled for two or three years. Prices are controlled more and more by the powers that be and not permitted to go skyward on even extraordinary provocation, and we look to see them permanently steadied by proper regulation, so that the striking contrasts that we used to see will not likely be visited on us. This is rendered all the more certain by the foreign demand, which is said to be excellent.

Labor is well employed and fairly well satisfied. The walking delegate has enough money to buy his checked waistcoat and watch seals, while more and more sense, we believe, is permeating the rank and file, so that while his presence is tolerated his "ukases" are less frequent and potent than formerly.

### St. Paul.

**FARWELL, OZMUN, KIRK & Co.**—Business conditions this month have been just about up to expectations. The weather has been about normal, although the general impression is, as is customary in such cases, that the season is later than usual. Retail merchants are putting their stocks into condition for the spring business, but are not buying heavily, preferring to replenish their stocks frequently rather than in large quantities. This will doubtless have its effect on the early summer trade, and if conditions come on favorably an active trade may be expected as the season advances.

Spring seeding has begun, but is not yet far advanced. Favorable weather will bring on active work in seeding, and while this will retard trade temporarily, early seeding is very much to be desired. Upon the whole the conditions continue favorable for the trade the first half of the year. Collections are about as usual at this season.

## NOTES ON PRICES.

**Wire Nails.**—There has been a revival of placing contract orders by jobbers for the purpose of keeping their stocks in a condition to meet the demands of the trade. This indicates that a continuance of demand is anticipated. Prices are firm and quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers.....\$1.85  
Carload lots to retail merchants..... 1.90

**New York.**—Local demand, for small lots from store, is fair. It is reported that jobbers' prices are being well maintained. Small lots from store are quoted on the basis of \$2.15 per keg.

**Chicago.**—Jobbers have been placing contracts with the mills during the week to replenish their stocks, which have already been heavily drawn upon this month. While these orders in no case are equal to the tonnage placed earlier in the year, they indicate the tremendous consumption and a movement of jobbers' stocks much earlier than was generally anticipated. Lake shipments of all kinds of Wire products to the Northwest are already being made in large volume, and the orders that have been received from large distributors in this section for rail shipments indicate that their stocks are very low. Quotations are firmly maintained as follows: \$2 in car lots to jobbers and \$2.05 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

**Pittsburgh.**—New demand for Wire Nails is showing some betterment and with the heavy specifications that are coming in on contracts the mills are pretty well filled up with business to July 1. There is still complaint about slow deliveries of Steel to the mills and this is interfering with output to some extent. Prices are reported as being quite firm and we quote: Wire Nails, \$1.85 in carloads to the large jobbing trade and \$1.90 in carloads to retail merchants, f.o.b. Pittsburgh, plus actual freight to point of delivery, terms 60 days, less 2 per cent. off for cash in 10 days.

**Cut Nails.**—Specifications on contract orders are being received by the mills in better volume. New business

is comparatively light. Quotations are as follows: \$1.80, base, for carload lots, f.o.b. Pittsburgh; \$1.85 for less than carloads, f.o.b. Pittsburgh; \$1.95 for carload lots, on dock, New York; \$2 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

**New York.**—Demand for small lots from store continues in about the usual proportion to that of Wire Nails. Market conditions remain unchanged, and jobbers' prices are reported as being maintained. Quotations are on the basis of \$2.05 per keg.

**Chicago.**—Demand is coming along in improved volume from the retail trade, and jobbers' stocks are being drawn upon more vigorously. Mills are confining business largely to specifications. Quotations are firmly maintained as follows: Steel Cut Nails in car lots, \$1.95; less than car lots, \$2; Iron Cut Nails, \$2.05 in car lots; less than car lots, \$2.10.

**Pittsburgh.**—New demand is only fair, and the mills are running mostly on specifications on contracts, which are being received in good volume. As soon as the country roads become passable, which will be before long, demand for Cut Nails will be better. We quote \$1.80, base, for carload lots, f.o.b. Pittsburgh; \$1.85 for less than carloads, f.o.b. Pittsburgh. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

**Barb Wire.**—Shipments from mills continue large, while new business is comparatively light. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots .....	\$2.00	\$2.30
Retailers, carload lots.....	2.05	2.35
Retailers, less than carload lots.....	2.15	2.45

**Chicago.**—New tonnage continues comparatively light, although mill shipments are being made in large volume, notwithstanding the heavy shipments made earlier in the year. Quotations are being firmly maintained. To jobbers, Chicago, car lots, Painted, \$2.15; Galvanized, \$2.45. To retailers, car lots, Painted, \$2.20; Galvanized, \$2.50. Retailers, less than car lots, Painted, \$2.30; Galvanized, \$2.60. Staples, Bright, in car lots to jobbers, \$2.10; Galvanized, \$2.40; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

**Pittsburgh.**—Very little new business is being placed, the mills running mostly on contracts. The increased use of Woven Fence Wire is cutting down consumption of Barb Wire very materially. Prices are firm, as follows: Painted Barb Wire, \$2, and Galvanized, \$2.30, in carload lots to the large jobbing trade, with the usual advance of \$1 a ton to retailers in carload lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in ten days.

**Smooth Fence Wire.**—The requirements of Wire Fence manufacturers have been heavy, but are now diminishing, as the season for manufacturing is coming to an end. Telephone companies are, however, placing large orders. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in ten days:

Jobbers, carloads .....\$1.70  
Retailers, carloads ..... 1.75

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....Base	\$0.05	.10	.15	.25	.35	.45	.55		
Galvanized....	\$0.30	.35	.40	.45	.55	.65	1.05	1.15	

**Chicago.**—The consumption is now being curtailed on account of the decreased requirements of Fence manufacturers whose manufacturing season is fast coming to a close. Heavy orders are being received from telephone companies, and, considering the season, the demand for Bale Ties is unprecedented. Quotations are unchanged, as follows: To jobbers, \$1.85, f.o.b. Chicago, in car lots, and car lots to retailers, \$1.90.

**Pittsburgh.**—New demand is very light, but the mills have heavy contracts on their books which will keep them busy for some time to come. Demand for Smooth

Wire from the telephone companies is very heavy at present. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in ten days:

Jobbers, carloads.....\$1.70  
Retailers, carloads.....1.75

The above prices are for base numbers, 6 to 9.

**Paris Green.**—Under date of April 16 manufacturers announced prices for Paris Green, subject to change without notice. There is a uniformity of prices among manufacturers, with the exception of base prices on 500 to 1000 pounds, and on less than 500 pounds. The difference is  $\frac{1}{2}$  cent per pound on the former and 1 cent per pound on the smallest quantity. It will be seen that this range of prices is used in the following quotations, as fully representing the market. Quotations on 5 tons and over are as follows:

Arsenic kegs.....20 c.  
Kegs, 100 to 175 pounds.....20 $\frac{1}{2}$  c.  
Kits, 14, 28 and 56 pounds.....21 $\frac{1}{2}$  c.  
Paper boxes, 2 and 5 pounds.....21 $\frac{1}{2}$  c.  
Paper boxes, 1 pound.....22 c.  
Paper boxes,  $\frac{1}{2}$  pound.....23 c.  
Paper boxes,  $\frac{1}{4}$  pound.....24 c.

Terms, 30 days, f.o.b. New York.

The following extras are charged for smaller quantities:

5000 to 10,000 pounds..... $\frac{1}{2}$  c.  
1000 to 5000 pounds.....1 c.  
500 to 1000 pounds.....1 $\frac{1}{2}$  to 2 c.  
Less than 500 pounds.....2 to 3 c.

A majority of the manufacturers are charging 2 and 3 cents advance on the last two quantities. The 1906 prices are about 8 cents per pound higher than the opening ones for 1905, announced on January 3, 1905. By July 10 prices had advanced 4 cents per pound. The manufacturers claim that they could have made more money this year by selling their Arsenic than by making it up into Green, but as they expect to continue in business they desire to hold their customers by supplying their wants.

**Tin and Galvanized Ware.**—Although no concerted action has apparently been taken, manufacturers of Stamped and Pieced Tinware have pretty generally advanced their prices because of the condition of the market for Tin Plates and Pig Tin. The advance is moderate, amounting to about 5 per cent., and attention is called to the fact that there have been two previous advances in raw material since the first of the year which have not been reflected in Tinware prices. The conditions affecting the sale of Galvanized Ware remain practically unchanged, the statement being made that prevailing prices are very near the cost of manufacture. A meeting of producers was held in Pittsburgh last week, but according to report it was impossible to reach an understanding which would lead to more remunerative prices, although a slight stiffening is reported on the part of one or two manufacturers.

**Axes.**—In a general way it may be said that the Axe situation shows considerable improvement. A large amount of business has been done and it is authoritatively stated that some manufacturers have placed practically their entire output. Others who have sold a large portion of their product are withdrawing quotations, with the idea apparently of reserving the balance to fill in stocks and supply smaller and later buyers, believing that in this way they may raise the average price of their total sales. Prices now ruling are at least 25 cents a dozen higher than a few weeks ago. Keen competition, however, for the business of the retail trade may be expected on the part of jobbers who have purchased large stocks of Axes at the lowest level.

**Rope.**—A fair to good demand is reported by manufacturers in the way of new orders. During the earlier part of the season contract orders were placed to some extent, which will be delivered during the present and following month. Quotations are as follows: Pure Manila, 12 $\frac{1}{2}$  cents; B quality, 11 $\frac{1}{2}$  cents; Pure Sisal, 9 $\frac{1}{2}$  cents; No. 2 quality, 8 cents per pound.

**Window Glass.**—As noted in our report Glass had been advanced by the Eastern Window Glass Jobbers' Association to 90 and 10 per cent. discount, with the exception of the New England States. In that district it is understood that the discount is 90 and 15 per cent. It

is reported the Western Jobbers' Association has advanced prices to 90 and 15 per cent. discount for all sizes, both single and double strength, and that if the manufacturers advance prices at their meeting the last of the week that the jobbers' price will be advanced to 90 and 10 per cent. discount on April 25, without meeting or notice. A much larger proportion of large size double strength Glass has been made than smaller sizes of double or single strength, and with the approach of hot weather the production of all sizes of Glass will be materially reduced.

**Linseed Oil.**—Business is quiet, demand being restricted to small lots for immediate requirements, which are light. A large amount of Oil was purchased during the fall and winter on contract orders, and crushers have been busy up to about six weeks ago providing for shipments. Since March 1 consumptive demand has grown smaller and thus far April has proved exceedingly dull. Owing to light demand purchasers on contract orders have had their deliveries held back until crushers have a surplus of Oil in tanks. The mild winter was so favorable for painting that it is thought by some that a revival of business in Oil may be deferred a month longer. City Raw is quoted at 42 to 43 cents per gallon. Out of town Raw is held at 38 to 39 cents, according to quantity, with deliveries on contract orders extending to August 1. Boiled Oil is 1 to 2 cents advance over Raw.

**Spirits Turpentine.**—Demand has been light, so that the small stock in yard at this point has been sufficient for all requirements. The offerings at Savannah have been small and have been readily taken up. New York quotations are as follows, according to quantity: Oil Barrels, 69 to 69 $\frac{1}{2}$  cents; Machine Made Barrels, 69 $\frac{1}{2}$  to 70 cents per gallon.

### REQUESTS FOR CATALOGUES, &c.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM CHESTER HARDWARE COMPANY, Chester, W. Va., which has been incorporated with a capital of \$10,000 to conduct a Hardware, Stove, Paint, Implement, Vehicle and Machinery business.

FROM PROWELL HARDWARE COMPANY, Birmingham, Ala., which has increased its capital stock from \$150,000 to \$225,000.

FROM WEBB-ZEIGLER HARDWARE COMPANY, Marysville, Ohio, which has bought the business of O. M. Scott & Bro.

FROM WM. BRENNEMAN, Bloomfield, Iowa, who has succeeded to the Hardware, Stove and Implement business of Wm. Brenneman & Bros.

FROM McMILLEN & NEFF, Badnock, Ohio, who will deal in general Hardware, operate a planing mill and manufacture and handle a line of Builders' Supplies.

FROM JOHN DEASY, Houlton, Maine, who has succeeded James Cogan in the Hardware business.

### PRICE-LISTS, CIRCULARS, &c.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our catalogue department in New York; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

IDEAL PUMP & MFG. COMPANY, Green City, Mo.: General catalogue No. 3 of Iron Pumps, Pump and Tubular Well Cylinders, Drive Well Points, Merchant Pipe, Brass and Iron Fittings, Valves and Cocks, Hay Forks and Carriers, &c.

STUDEBAKER BROS. MFG. COMPANY, South Bend, Ind.: Booklet referring to the Studebaker Junior Children's Wagons.



### A MUSICAL WINDOW DISPLAY.

SAN BERNARDINO HARDWARE COMPANY, San Bernardino, Cal., recently made use of a novel and effective window display, the work of Chas. Marsden, one of its employees. The photographic reproduction herewith does not do full justice to the display, as it omits the colors. The entire background was red calico, set off by white curtains, rosettes and flowers. On the right was an organ made entirely of articles sold in the store. The pipes were made of Stove Pipe and Galvanized Conductor Pipe, while Tin Bread Boxes and Cash Boxes formed the base. The manual was framed with a high Closet from a Range. The keyboard was made of Black and White Handled Table Knives, Porcelain Shutter Knobs formed the stops and Hammer Handles the foot pedals. A Bath Tub Seat provided an organist's bench, the music rack being made of Wire Toasters. A wax doll loaned by a neighboring milliner was seated on the bench in the attitude of playing, the impression being intensified by the music of a graphophone playing the "Holy City" and other suitable selections. This machine was operated on the inside, there being an open grating under the window through which it could be heard across the street. On the left of the window was a \$25 Range

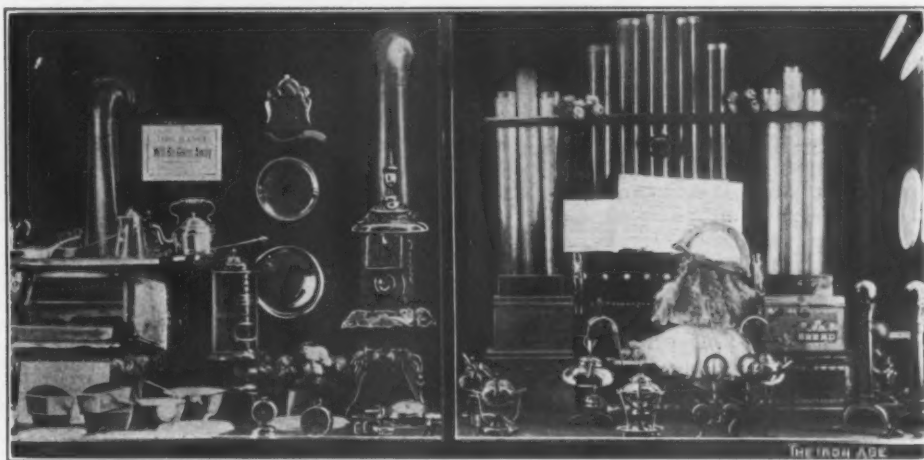
Milam & Son of Frankfort, Ky., manufacturers of the "Frankfort, Kentucky," Fishing Reels. The other day an elderly gentleman visited their plant, bringing with him a reel made by the firm in 1840. He said it had seen hard usage by himself and by his father before him. It was still in excellent condition and he said he would not exchange it for a new one.

THE EMPIRE RUBBER WORKS, 88 Reade street, New York, will, on or about May 1 next, move to 148 Chambers street.

JOHN BINDLEY of the Bindley Hardware Company, Pittsburgh, and also identified with the Pittsburgh Steel Company, has been elected president of the Duquesne National Bank of that city, succeeding his brother, the late Edwin Bindley.

RED JACKET MFG. COMPANY, Davenport, Iowa, is publishing a house organ styled *The Red Jacket Idea*, "A Periodical of Pumpology." The paper, which is illustrated and printed in two colors, contains information and advertising matter referring to Red Jacket Pumps, together with considerable entertaining matter of a lighter vein.

U. L. KLINE, 773 Hoyt street, Portland, Ore., has purchased the plumbing and steamfitting supply depart-



Window Display of San Bernardino Hardware Company.

ment of Corbett, Failing & Robertson of that city. Mr. Kline has had more than 20 years' experience in this line in Portland.

THE SIMONDS MFG. COMPANY, in referring to the taking over of the business of the Fitchburg File Works, Fitchburg, Mass., manufacturer of Files and Hack Saws, by the Simonds File Company, announces that in the future this business will be handled in New York territory by the Simonds Mfg. Company, at 40 Murray street, New York.

GEORGE B. CARPENTER & Co., dealers in railroad and contractors' supplies, Twines, Cordage, Packing, &c., Chicago, are having plans prepared for a warehouse addition eight stories in height, 25 x 100 feet. Two stories will also be added to the present buildings.

THE MUNN HARDWARE & MFG. COMPANY, Milwaukee, Wis., which has for many years occupied a store in the Colby & Abbott Building, will move on May 1 to the new building erected by the Wells estate and occupy the store from 132 to 136 Mason street. The new location is half a block from the present store.

BURGER & BAUMGARD, 105 Chambers street, New York, are marketing the Joe Dawson Hammock Hoe, made in two sizes, Sr. and Jr., which is named after Joseph Dawson of Orlando, Fla., who has visited the Southern trade of the house for over 20 years. This hoe, which has long been on the market, is used largely for cutting out roots, &c., and is especially suitable for cleaning up boggy and swampy ground.

L. B. Carlton & Co., Alvin, Texas, have sold their Hardware, Stove, Implement and Sporting Goods business to Alvin Hardware Company, of which W. C. Greer is the principal owner.

### TRADE ITEMS.

At a regular meeting of the directorate of the Norwalk Lock Company, South Norwalk, Conn., held April 11, M. R. McCausland, for 18 years with Sargent & Co. and recently made manager of the New York branch, was appointed general sales manager to supervise the marketing of the finished product of the company, which consists of a full line of Fine Builders' Hardware.

THE Metropolitan Engineering Company, Brooklyn, N. Y., manufacturer of Electric Signs, will about May 1 move into its new factory building, 1250 Atlantic avenue. The company's general offices will be located there for the present.

BENJAMIN DYER WASHBURN died April 12 at Pembroke, Mass. He was born in Taunton, Mass., in 1825, and until 25 years ago was engaged in the Hardware business, first with his father in conjunction with the furniture trade, and beginning in 1864 in the jobbing trade at Boston. During the past 25 years he had been engaged in the real estate business. He leaves four daughters.

THE Executive Committee of the National Hardware Association will meet at the Hollenden Hotel, Cleveland, Ohio, May 7, 8 and 9. The Hollenden will also be the scene of a meeting of the Wholesale and Retail Joint Committee on the following Thursday and Friday, May 10 and 11.

AN unusual illustration of the durability of a well made article has been brought to our attention by B. C.

## CALIFORNIA HARDWARE ASSOCIATION.

THE California State Retail Hardware Association, which held its annual meeting last month in San Francisco, made a material gain in membership during the year, and is now well above the 400 mark. The scope of territory covered by the membership has also been enlarged, and the association is now in a strong and influential position. The State Association comprises a number of sectional or local organizations, the members of which come together frequently during the year for interchange of views and joint action. At the annual meeting of the parent body reports are presented from these subsidiary associations in which local conditions as they find them are described, and where annoyances exist remedies sought or suggested.

At the recent convention reference was made in the report of the San Francisco Association to the effort made to stamp out the trade evil of second-hand dealers in that city selling new articles of Hardware by securing the co-operation of the jobbing houses in refusing to supply such dealers with goods. This agreement to protect the retail Hardware merchants has been faithfully observed by most of the jobbers, but several of them have been somewhat indifferent in their support.

### The Maintenance of Retail Establishments

by jobbing houses has also been a source of much annoyance and vexation, and effort is making to induce such houses to discontinue their retail departments.

In the report made by the Pacific Association the competition of small general merchandise stores and crossroad blacksmith shops, situated generally near one of the larger towns, was cited. It had been found that these stores made a specialty of selling at cost price with freight added many Hardware staples, such as Nails, Barb Wire, Rope, Baling Wire, Hay Forks, Fencing, Harvester extras, &c. It was stated that this class of trade was able to buy from the jobbing houses at as favorable prices as the regular Hardware merchant. When a customer called on them for any considerable quantity of the above goods, or even some Builders' Hardware for the erection of a house or barn, the jobbing houses were sent a list of the customer's requirements, only the exact quantity of goods called for by the customer being ordered or received. The goods were then sold at cost price, with freight added, the offending stores relying on their general merchandise stock to pull them out with a profit on other goods. The recommendation was made that such dealers should be put on a special list and charged higher prices by the jobbers than the regular merchant. It was also recommended that the State Association keep on record at its office in San Francisco a

### List of the Retail Merchants

of the State, indicating those who are affiliated with the association and those who are not affiliated and not governed by its rules and regulations, so that when an order is received by a jobbing house who is not informed in regard to the standing of the party giving the order, he may obtain the information from the association records. It was suggested that jobbers through their travelers and in other ways should make diligent inquiry, with a view to discriminating in a fair manner between those who procure goods to sell at a profit and those who buy goods to be used as a bait for their general merchandise trade.

The report of the San Joaquin Association also recommended the classification of retailers throughout the State, so that the regular Hardwareman might be protected in the maintenance of reasonable and profitable prices. The members of this association have also suffered from the jobbers' practice of selling goods to second-hand stores. Some annoyance has also resulted from jobbers selling Nails and Builders' Hardware to contractors and lumber yards at wholesale prices.

The Alameda Association reported trouble caused by jobbers who have business relations with local machine shops, lumber companies, shipbuilding plants, saw

mills, bridge builders and railway contractors. The jobbers were represented as selling these parties at prices approximately as low as those made to the Hardwareman, thus cutting the latter out of the business.

### Trailers and Peddlers.

The North Coast Association called attention to the necessity of making another effort to put through the trailer and peddler bill which was introduced and passed at the last session of the Legislature but failed to receive the Governor's signature. A number of Eastern manufacturers of Stoves, Wind Mills, Buggies, Vehicles, &c., were trailing and peddling these goods through the country, to the great annoyance of merchants, while contributing nothing to the revenues of the localities through which they traveled or to the State at large.

Touching on the matter of the classification of the trade and furnishing such classification to the jobbers, the following resolution was adopted by the State Association:

*Resolved*, That a list of the legitimate Hardware dealers in each community be furnished by the members of this association to the wholesalers' association under proper classification, and that we also recommend the preparation of a list of those wholesalers who, after being advised as to who are legitimate Hardware dealers, still continue to sell to outsiders, the said list to be mailed to each and every member of this association that they may govern themselves accordingly.

### Association Funds.

It was also decided that the funds for the support of the State Association should be levied on a graduated scale according to the business done by the individual members, with yearly dues as follows: Those doing a business of \$20,000 or less per year, \$12; \$20,000 to \$40,000 per year, \$24; \$40,000 to \$75,000 per year, \$36; \$75,000 or over, \$48, payable quarterly or in their entirety in advance.

### Members Present.

The following firms were registered as having representatives at the meeting:

Chas. Brown & Son, San Francisco.	R. Barcroft & Sons Co., Merced.
Mercantile Union, Lompoc.	James Gally, San Francisco.
Hochheimer & Co., Willows.	Hampton Hdw. Co., Marysville.
Turner Hardware Co., Modesto.	H. C. Shaw Co., Stockton.
R. O. Kimborough, Sacramento.	McCormick-Saeltzer Co., Redding.
Palo Alto Hdw. Co., Palo Alto.	Grangers' Union, Hollister.
Kansen & Williams Hardware Co., Ferndale.	McKee, Carr & Co., Placerville.
De Laney Hdw. Co., Porterville.	Ruhl, Goodell Co., Stockton.
Oscar C. Schulze, Dixon.	Suisun Implement Co., Suisun.
W. A. Etting, San Francisco.	G. M. Hickman, San Francisco.
W. M. Doty, Biggs.	Wright Hdw. Co., San Francisco.
John Simpson, Tehama.	J. Grover, Colusa.
John Morton, San Mateo.	H. Mitchell & Son, Colusa.
A. W. Garrett, Healdsburg.	R. M. Beebe, Gridley.
Smith Bros. Hdw. Co., Oakland.	J. A. Murray, Woodland.
J. H. Steves Hdw. Co., St. Helena.	Pierce Hdw. Co., Oakland.
Nichols Hdw. Co., Chico.	Henry Gracey, San Francisco.
F. A. Smith, San Francisco.	S. J. Dean, San Francisco.
James Cass, Cayucos.	J. H. Kruse, San Francisco.
San Jose Hardware Co., San Jose.	H. A. M. Hall, San Francisco.
Estate of J. P. Klemmer, Willows.	Haven Hdw. Co., Santa Rosa.
Donohoe, Emmons & Co., Fresno.	Fisher-Glassford Hardware Co., Fresno.
Kleidsen-Hall Implement Co., Fresno.	C. L. Bills, Oroville.
Denny-Bar Co., Etna.	Joost Bros., San Francisco.
Geo. C. Comstock, Williams.	W. B. Wood & Son, Modesto.
G. W. Tibbetts, Colusa.	City Store, San Jose.
Hull Bros., Redwood City.	Alex. Gibson, San Francisco.
Smith Bros. Hdw. Co., Oakland.	C. E. Kocher, Merced.
White, Cooley & Cutts, Marysville.	A. Rittigstein & Co., Oakland.
Devore & Pettis, Ocean Park.	Palace Hardware Co., San Francisco.
Brown & Chappell, Hollister.	Archibald Implement Co., Fresno.
G. A. Chappell & Co., Gilroy.	F. Duhring, Sonoma.
Robinson Hardware Co., Gilroy.	Bennett Bros., San Francisco.
Alexander-Yost Co., San Francisco.	Bryne Bros., Santa Cruz.
Ophir Hardware Co., Oroville.	Hull Bros., Redwood City.
Joost Bros., San Francisco.	Christ. Mayer, Gridley.
Gunn & Ferguson, Healdsburg.	C. H. Reed Co., San Francisco.
E. E. Morrow & Son, Santa Rosa.	Young Hardware Co., Napa.
Finnell-Hardin Hardware Co., Sebastapol.	San Joaquin Implement Co., Stockton.
W. F. Day, Dinuba.	Walter Meese, Oakland.
Chas. Ross, Dinuba.	Eyman Hardware Co., Reedley.
	Haven Hdw. Co., Santa Rosa.
	O. R. Cross Hdw. & Imp. Co., Visalia.
	Roschkin Hdw. Co., San Jose.
	Amaden & Wyman, Dinuba.



F. G. Norman & Sons, San Francisco.  
 H. Graff & Co., Fresno.  
 J. T. Coon, Guerneville.  
 Hawkins & Munger, Arroyo Grande.  
 Ketterlin Bros., Santa Rosa.  
 Bryant & Trott Co., Santa Maria.  
 J. F. Parkinson Co., Palo Alto.

San Lund & Moreh Co., Berkeley.  
 Lyon & Garrett, Red Bluff.  
 Scott & Co., San Rafael.  
 Johnson Hdw. Co., San Rafael.  
 J. H. Potter & Son, Santa Rosa.  
 Parkinson Bros., Mountain View.  
 A. P. Brunner, Ukiah.  
 Anderson & Chisholm, Benicia.

### DEATH OF ROBERT SICKELS.

**R**OBERT SICKELS died at his home, 735 St. Nicholas avenue, New York, April 11. He was president of both the Sickels & Nutting Company, New York, and the Sickels, Preston & Nutting Company, Davenport, Iowa. Mr. Sickels was born in Albion, N. Y., April 15, 1833, and after such schooling and home training as laid the fundamental principles for the successful career just ended he began business life as a clerk in a general store in



ROBERT SICKELS.

Albion, where his elder brother was the proprietor. His work in Albion was that of most boys beginning a business career, and as he had always contemplated being a merchant a chain of circumstances led him into the field which has been his life work commercially.

Mr. Sickels' brother, the proprietor of the Albion store, had a financial interest in a Hardware firm in Davenport, Iowa, known as T. Close & Co., which business was conducted by his two partners, who were residents of Davenport. Desirous of severing his connection there Robert was delegated by his brother to go to Davenport and look after his interests, while that was being accomplished. This trust caused Mr. Sickels to remain in Davenport two or three years, in which interval circumstances seemed to justify the wisdom of remaining there and casting his personal fortunes in the Hardware trade.

The first location of what is now the Sickels, Preston & Nutting Company was on Brady street, on the water front, where the business in new towns so situated is most active at the beginning, but as the town grew and business thrived the firm moved to higher ground on Second street, and in 1874 to Third street, where the business is still conducted.

Mr. Sickels' identification with the business as a principal dates from 1863, when the firm name was Sickels & Preston, the partner being Andrew J. Preston, formerly of R. W. Booth & Co., Cincinnati. Mr. Sickels had little capital but untiring zeal and capability for work, while Mr. Preston, who possessed capital, did not care to con-

fine his activities to the exactions of store routine. In 1864, Col. James R. Nutting, now in charge of the Davenport house, entered the firm's employ, becoming a member of the concern about 1881.

In addition to the customary lines of Hardware then carried, much attention was given to mill furnishing goods and mill supplies, owing to the then great lumber interests in a comparatively new territory. In 1865 the partners conceived the idea of carrying on in addition to the business of the parent house a wholesale Hardware business in Chicago, but three years' experience in that field convinced them of the wisdom of winding up their affairs there and concentrating their energies on the Davenport house.

In 1886 Mr. Sickels' health became impaired and he spent a year in Europe, after which, returning to the United States, he concluded to establish himself in the wholesale Hardware field in New York, which he did in January, 1890, the firm being first known after his identification with it as Sickels, Sweet & Lyon. Previous to this time the house was a well known jobbing concern, which originated in 1848 as Whittfield, Cohu & Co., becoming Mooney, Cohu & Co. in 1859 and Louderback, Gilbert & Co. in 1863, Gilbert, Sweet & Lyon in 1888 and Sickels, Sweet & Lyon, 1890 to 1897, when the business was incorporated as Sickels & Nutting Company, as now known.

Mr. Sickels was modest, unobtrusive, possessed of much dignity and wholesome straightforwardness, as well as a gentleness and courtliness of manner belonging to the merchant of the old school. He was genial and hospitable, universally respected for his integrity and sense of honor by both business and social acquaintances, exemplifying as he did a high type of Christian gentleman.

He was a member of the Hardware Club and was one of the Board of Governors, president of the Hardware Board of Trade, New York, a member of the Holland Society, a Mason and a vestryman of St. Luke's Church, New York. He is survived by a widow and one married daughter, Mrs. Fred. I. Simpson, whose husband is identified with the Sickels & Nutting Company.

### NEAL & BRINKER COMPANY.

**T**HERE have been some changes in the personnel of the Neal & Brinker Company, 18 Warren street, New York, well known to the trade as an enterprising and successful house. B. B. Neal, who has been its president, retires from the company. Mr. Scott has also withdrawn, transferring his interest in the house to others connected with it for many years, who will continue with it as heretofore, except that they will take a more important part in the conduct of the company's business. Mr. Brinker will assume the presidency of the company and give his personal attention to the supervision and direction of the sales and buying departments. William F. Puls, until recently manager of the Trout Hardware Company, Chicago, has purchased Mr. Neal's stock in the company, and will be its vice-president. Mr. Easton, for many years in charge of the accounting department, will become secretary and treasurer. With the exception of these changes in individual duties the company's business will continue as formerly, and the same careful attention as heretofore will be given to the execution of orders and to the direction of the company's interests. As is well known in the trade, the Neal & Brinker Company has had special relations with the Simmons Hardware Company, St. Louis, in the marketing of the Keen Kutter brand of goods, and it is announced that Simmons Hardware Company will continue its very liberal line of credit which has enabled the Neal & Brinker Company to more than double in volume its output in the past year.

It is understood that Mr. Neal and Mr. Scott are forming a new company which will be characterized by some novel features in connection with the purchase of supplies, materials, &c., for mills, factories and large manufacturing establishments, thus utilizing their familiarity with the trade and the experience they have acquired. It is expected that a detailed announcement of their plans and operations will be made in a few days.

FACTORY COST AND BUSINESS METHODS.

A SUCCESSFUL PREMIUM SYSTEM.

In our last issue we began the description of a premium system as employed in the shops of the Worcester Loom Company, Worcester, Mass., where it has been used for several years in a considerable part of the production, though not to the exclusion of day labor. A table was given showing the relation of the burden or general expense under the premium plan of wages and the blue print chart giving directions for job and workman's premium time card were illustrated and described.

Concluding Article.

Figs. 3 and 4 show the system of keeping records of cost in the office. Fig. 3 is the transfer card, of which there is one for each operation on each piece; that is, one for each

There is also a credit of 1 cent for scrap. The total of material, labor and burden is 83 cents, and subtracting the 1 cent credit for scrap gives a total cost of 82 cents, known as present cost. The time cards may be destroyed as soon as their data has been entered upon the payroll and the transfer cards.

Apportioning Burden to Product.

Mr. Alvord's method of apportioning burden to product is an interesting one. At the end of each month the expense, exclusive of productive labor and material, is totaled. Nonproductive labor, such as repair work, sweeping, portion of draughting room expense, rent, salaries, insurance, depreciation, &c., in fact, everything excepting labor that produces, are included in the item of burden. The total number of productive labor hours—that is, the total hours worked by all employees in producing for the market, is then procured, and the total burden is divided by the total number of hours. The result is the burden cost per productive hour. Thus, if a shop has 10,000 productive hours per month and the burden is \$1600, then each productive hour will have to carry a burden of 16 cents. The amount varies, of course. The busier the shop the lower the burden per productive hour, for burden

Total Jobs							Job No. 2009 E				
Or. No.	Date.	Wt./m	Mch. No.	Quantity	Hours all'd one piece.	T. Time taken.	Hours saved.	Hours taken for one pos.	C M	Labor cost.	Remarks.
40	1904	19		11	1-5	7-20	4-35	0-40		0.129	

Fig. 3.—Transfer Card Showing Labor Cost of One Operation.

letter on each chart. Upon this card is kept a record of the labor cost of performing the operation on every piece of the kind that goes through the works, the record extending over years. The card shown has the record of operation E, Job 2009, order 40, as indicated by the time card, Fig. 2. The items entered include workman's number, quantity, number of hours allowed per piece, the time taken, hours saved, hours taken for one piece, and the labor cost per piece, including premium. When the piece is completed—that is, when all of its operations have been performed, then the totals of all the transfer cards are entered upon the

General Cost Card,

Fig. 4. This card gives the total cost of the piece, including material and burden or general expense. In detail, it has the date upon which the part was completed, its ma-

does not by any means decrease with payroll. Mr. Alvord has found that 16 cents is a low cost for burden, although 15 cents has been reached.

The burden per productive hour having been obtained, it is reckoned into the cost of every piece by the simple process of multiplying the burden by the total number of hours consumed. This method of reckoning burden is claimed to work more satisfactorily than the usual method of taking a fixed percentage and reckoning that into the cost per piece, because it is actually accurate.

The Theory of This Method

of reckoning burden is that it is not fair to figure it on the basis of the number of dollars in the payroll. It should be reckoned on the basis of the number of productive hours. Instead of saying that a piece of work cost \$2 in labor, it is more accurate to state that it took 20

No. 2009		Total Jobs.					S. P.			
Date	Mat.	G. Wt.	Cl. Mat.	Hrs.	L. Ct.	Scrap.	Cr.	Pr. Ct.		
1904 1/31	C.I.	5	0.17	1-54	0.35	2	0.01	0.82	b-.31	

Fig. 4.—General Cost Card Covering Entire Job.

terial, gross weight, cost of material, total hours consumed to produce it, labor cost per piece, number of pounds of scrap, credit for scrap, present or total cost and the burden. From these total cost cards the cost of the entire machine is readily compiled. This card is equally well adapted for record, whether the work is done by the day or on premium, which is necessary, as both methods are employed.

An examination of the cost card, as shown in Fig. 4, gives the history of piece No. 2009, order No. 40. In it are totaled from the transfer cards the time consumed in producing one piece—in other words, the combined time of all the operations on that piece—and the labor cost per piece, including premiums paid, amounting to 35 cents. In addition, there is the cost of material, 17 cents, and the burden of 31 cents, obtained by multiplying the number of hours required to manufacture the piece by the burden per hour, which in this instance was 16 cents.

hours to produce it. This theory is illustrated by an incident which happened at the shop of the Worcester Loom Company. A low priced workman was doing a certain job and was taken sick. His work was given to a high priced man. It was found that the labor cost per piece was greater with the high priced man doing the work. But the actual cost of the piece was lower. The reason for this was that less time was taken to produce one piece, and while the workman's time, even at the more rapid rate of production, cost more per piece than that of the low priced man, nevertheless the burden was lower per piece, and the total of the lower wage cost and the higher burden cost of the low priced man was greater than the total of the higher wage cost and the lower burden cost of the high priced man. In other words, it may frequently happen that high wages may be cheaper than low wages in performing work that the low priced man may do as well as the other. Consequently reckon-



ing burden on the dollars in the payroll may be deceptive, while employing the number of productive hours as a basis affords an opportunity for a more intelligent comparison of costs of production.

### Keeping the Payroll.

In conducting a premium system it is necessary to have a comprehensive method of keeping the payroll. The company has adopted one for the purpose. It is shown in Fig. 5. In the first place a color scheme is used in the time cards to distinguish between the departments of the works. Red, white and blue are employed, and there are two shades of each, buff being the alternate for white. One shade is for use in the premium system, the other is for day work. On the payroll the different colors are designated R., W. and B.

One of the blank sheets is devoted to each workman,

Workman No. 31 Name		1	2	3	4	5	6	7	8	9	10
Order	R.	6	10								
Lot	W.										
	B.										
Order	R.				5						
Lot	W.										
	B.										
Order	R.										
Lot	W.										
	B.										
Order	R.										
Lot	W.										
	B.										
Tool Making		4				7	10				
Drafting											
Tool Fixing				10	5						
Cleaning Castings											
Painting											
Sweeping											
Wood Patterns											
Iron Patterns											
Total Hours											
Rate	Premium			1.05	28			1.33			
Pay Roll											
Total		10	10	10	10	7	10	57			
								11.90			
								1.33			
								12.73			

Fig. 5.—Workman's Monthly Time Sheet.

and covers a month's time, 31 days, each vertical column representing one day. Sundays are included in the spacing, the week's total being kept in the Sunday column. Horizontally a record is obtained of the class of work done. There are blanks for four orders and lots, and for various other classes of work, some productive, others nonproductive. If the man is working by the day the time clerk enters the number of hours in black ink. If he is working on the premium basis red ink is employed, which for sake of illustration is designated in Fig. 5 by figures in dotted lines. The horizontal line above the totals is devoted to the premium earned, which is entered not necessarily daily, but on the day that the job is completed. It will be noted in the illustrations that on January 1 workman No. 31 worked four hours by the day tool making and six hours on premium, and the next day ten full hours on premium, completing the job begun the day before. He earned 1.05 cents in premiums in addition to his regular hourly wage of 20 cents. The remainder of the week was all day work, with the exception of the fourth, when he worked five hours on premium, earning 28 cents above his wages. For the week, totaled in the column for the 7th of the month, he worked 57 hours at 20 cents an hour and earned \$11.40 at that rate and \$1.33 in premiums, a total of \$12.73. This form of payroll gives a very complete record of what every man is doing.

## ED. FORD ON TRADE QUESTIONS.

Letter No. 4.

### Preventing Retail Catalogue Houses from Illustrating Well-Known Goods.

THE Catalogue House Committee, some jobbers and many retailers argue that the manufacturers should prevent their (the manufacturers') goods from being illustrated by the retail catalogue houses.

I doubt if those who make this request realize what this means to the manufacturer. Many would have no difficulty in complying and all manufacturers would be happy to refuse to supply these catalogue houses if this would prevent the catalogue house from getting the goods, but the moment a manufacturer discontinues supplying the large catalogue house, if the line is a desirable one, the catalogue house "gets busy" and can find plenty of jobbers ready to supply and not at full prices, but at a trifle above actual cost, and if the manufacturer is aggressive and watchful enough and willing to spend time and money freely he may stop the jobbers, but then the catalogue house buyer goes to the retailer and gets his orders filled. Thus the manufacturer is put to a large expense and much discomfiture, while the jobber and retailer look on and encourage the contestants from both sides, very much like a crowd of boys watching a dog fight and shouting "Sic 'im, Tige," enjoying the sport as long as they individually do not get hurt.

### How Supplies Are Obtained.

Of late the large jobbers and those interested in catalogue house work have been loyal to the cause, but there are still left plenty of pirates in the trade as well as specialty houses, such as sporting goods jobbers, who make a specialty of supplying the catalogue houses with goods they cannot buy from factories direct, and when the manufacturer watches his goods so close (which means a great expense) that the jobber can no longer safely carry on this underground delivery work, then the retail man who is not loyal to his fellow men is called on, and even pawnbrokers help to supply goods. Many jobbers do not care where the goods go, only so they make the sale and no direct evidence shows up against them, but if they sell a pawnbroker and the latter sells the catalogue house, the jobber eases his conscience by saying: "I am not to blame; I can't watch over all the goods I sell."

Years ago many goods were sold on the rebate plan and jobbers who would sign an affidavit stating they had in no instance cut the fixed selling prices were paid a refund, and although it was reported by competitors that many jobbers cut these fixed prices, there was always some officer of the company who was not informed as to what was transpiring quietly in the sales department and could conscientiously sign "to the best of his knowledge and belief" and get the refund. Thus, "where ignorance is bliss 'tis folly to be wise."

One of the buyers of a large catalogue house was shut off from factory buying a certain line of goods, and he said to me he was surprised to find how easy it was to pick up the goods at 2½ to 5 per cent. above the best jobbers' cost, and that "if the jobbers would close their back doors as close as they did the front doors it might be harder to get supplies." Commenting on this to the management of another large catalogue house, the president said, "That buyer knew what he was talking about."

### Loyal and Disloyal.

Again I want to state most positively that I have every reason to believe that the large jobbers, some of whom once sold the catalogue houses largely, as well as the smaller ones who are interested in this catalogue house work, are entirely loyal to the cause, but the trouble now rests with the pirates noted before and largely specialty houses.

A manufacturer some few years ago put up an aggressive fight against the retail catalogue house, and was fairly successful, but the principal annoyance was in keeping second and third parties from supplying, and it resulted in a compromise that the factory sell the cat-

atalogue house direct and they publish prices that would not disturb the retailer.

I know of a contention going on now, and one manufacturer is honestly exerting himself to the utmost to keep a catalogue house out of goods, but is unable to do so. Pawnbrokers and retailers all over the United States are supplying the goods, until the catalogue house has more of the *staple numbers in stock* to-day than any jobber in this country. They cannot well handle any specials, staples only, such as can be drawn in small lots from any jobber's stock.

*I know positively* this catalogue house can get more of these goods in staple patterns than they can use. They may be temporarily out of some numbers, as it takes extra time to get goods in roundabout ways, and all jobbers who order direct are often out of staple goods, and as proof look at their daily back order sheets.

The president of this catalogue house said to me a short time since that it was the best proposition his company had ever enjoyed, the line was well known, they published cut prices, and it was "great advertising." The department was credited with the regular profits and the loss charged to advertising, and he considered it the most profitable advertising they had ever done.

#### Resources of the Catalogue House.

Inasmuch as the large catalogue houses have the cash, as well as the ways and means to get all the goods they want, unless the jobbers can control their own and the retailers their own, who are looking for immediate results only, is it not best for manufacturers to sell this class of trade direct and control their selling prices, so any retailer can meet the prices and make a legitimate and satisfactory profit and draw his supplies from the jobber?

I heard one manufacturer offer to the associations to refrain from selling directly or indirectly to catalogue houses and pay a big bonus if the associations would guarantee to take care of the catalogue house proposition and not allow cut prices to be printed therein.

Many manufacturers would be only too pleased to not sell the retail catalogue house if they could be successfully kept out of their goods, and would form compacts with retailers and jobbers, agreeing to not sell these catalogue houses nor allow them to get any of their goods except as went through the jobber or retailer, the last two agreeing to absolutely prevent any of their own class from supplying them. But when it comes to the manufacturer trying to keep the catalogue house out of goods, and being obliged to spend most of his money, time and energy fighting the unloyal jobbers and retailers, the very people he is trying to protect, it is creating a condition mighty few manufacturers are willing even to attempt to cope with.

ED. FORD.

NEW YORK SPORTING GOODS COMPANY, 17 Warren street, New York, with branch also at 61 Nassau street, has just issued a series of new catalogues. Catalogue No. 36, of Sporting Goods, contains 164 pages and illustrates and describes Firearms and Ammunition and various kinds of paraphernalia for sportsmen, campers, golfers, &c. Another one of 64 pages relates specifically to Bicycles and Sundries, while a small one, envelope size, contains a number of Automobile Specialties which the company controls.

ALEXANDER H. BREMFOERDER, doing a general Hardware business at 2111 Central avenue, Cincinnati, Ohio, died on March 14. Alphonse S. Wetterer has been duly appointed and has qualified as administrator of his estate, and is about to take an inventory and appraisal of the estate, including the stock of Hardware at the above address. The stock of goods and business may hereafter be offered at public or private sale, as the court may direct.

A. J. Hummer, Guernsey, Iowa, has sold his Hardware, Stove and Paint store to G. Bonn.

## ADVICE FOR SALESMEN.

*There is an education gained outside of books. A salesman, like an ambitious student, learns something new each day. Mankind is his teacher, and upon his ability to profit by the knowledge gained depends his success as a salesman.*

BY FRED BRADFORD ELLSWORTH.

**A** SALESMAN who is particular about his personal appearance is generally careful in his business transactions. The art of being a good dresser consists in a knowledge of good form, and being able to discriminate between the refined and commonplace. Dress the best you can afford to. You can't do it too well. Clothes may not make the man, but they help mightily. A well groomed man carries an air of prosperity with him.

#### Cheerfulness and a Sunny Disposition

are often due to temperament and environment, but can be cultivated. They count for much in the business world. Cultivate a smile if you haven't one naturally, and do it even if it hurts you.

Never tell a vulgar story. Vulgarity denotes coarseness, and that is poor breeding. Tell a good story whenever you can appropriately do so. It adds sunshine to an often gloomy atmosphere.

Be proud of the fact that you are known as a salesman. If you are a salesman, you are necessarily a good business man, and most all good business men are salesmen.

A salesman is one who goes out on the road to sell goods. Never permit yourself to be called a drummer. A drummer plays with a band. A peddler calls out his wares on the streets. Some salesmen become peddlers.

#### Give the Best Prices

you have at the start. It inspires confidence. Never cut a price unless absolutely necessary. It is much better to lose an order than to take it at a price without a profit. Business is done for profit, not glory.

The best honesty is that which comes from knowing no other way. You can't beat that kind of honesty.

The man who cuts short corners on the road to fortune generally hits a stone fence, if his dealings savor of methods that are not on the square.

The salesman who is unable to discriminate between his own and the firm's money, eventually finds he has gained nothing and lost something.

Never buy business. It is dishonest, and in the end costs too much money. Besides, your reputation is at stake.

#### Never Borrow Money

from a salesman. If your credit is good you can get what you want from your firm or at your hotel. The salesman who makes a practice of borrowing is "no good" and living beyond his means.

Unless absolutely imperative do not act as collector for your firm. It is detrimental to you in your relations as a salesman. That is the work of the credit man.

#### Keep Your Appointments

with your customers and insist on their doing likewise. That is business. Their time is valuable and yours is just as much so.

Never under any circumstances lose your temper in transacting business. When you do you lose a certain amount of self respect and your own self control.

The hardest customer to secure is sometimes the easiest to hold.

#### If You Enjoy a Good Drink

do it out of business hours. Don't use that as an excuse for doing business. The liquids that paint landscapes on your memory are not necessary in transacting business. Business that has to be done over a bar is not worth obtaining in a long run. I know several wine salesmen who never indulge.

Don't talk about the business you are doing, or the money you are making. It is the chap who says nothing who progresses. The class of salesmen who brag about big orders and salaries, mostly imaginary, belong to the class without a country.



# The Hardware Store of Neal & Brinker Company.

## THIRD ARTICLE.

IN the last article of this series a description was given of the method of displaying samples of Hardware in the store of Neal & Brinker Company, New York, on sample boards fronting bins or compartments or on the

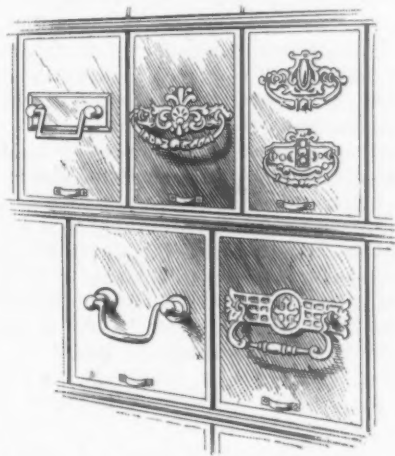


Fig. 10.—Shelf Boxes Containing Drawer Pulls.

outside of drawers and shelf boxes in which goods are kept. Some attention should be devoted to the method of

### ATTACHING SAMPLES

and holding them in place. In general it may be said that wherever the nature of the stock will permit, sam-

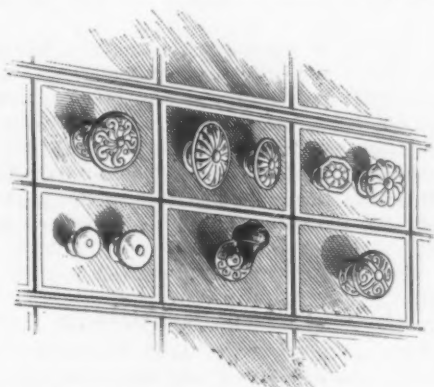


Fig. 11.—Samples of Drawer Knobs.

ples are attached to the boards, drawers or box ends by loops of wire which pass around the sample and through the wood, the ends being twisted together on the back, making it next to impossible for the samples to shake off in handling, as frequently happens where ordinary sta-

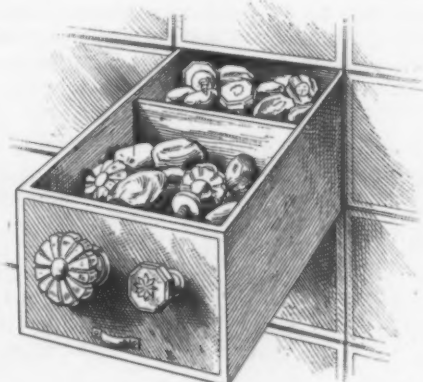


Fig. 12.—Shelf Box with Compartments for Two Designs of Drawer Knobs.

ples are used. The Chisels and Gouges shown last week in Fig. 5 are attached in this way, as are a majority of the lines carried on the shelves. Many of the Angle Irons illus-

trated in Fig. 6 of the preceding article are also attached by wires, although the flat Braces and Corners are naturally fastened by a couple of Screws inserted in the regular Screw holes. Other methods of attachment are more practicable or convenient for certain articles, as will subsequently be described.

Fig. 10 shows a section of shelving devoted to Drawer Pulls, which of course require nothing but their own bolts

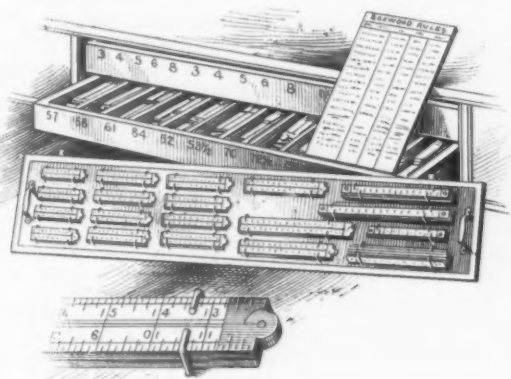


Fig. 13.—Compartment Trays for Rules, Showing Price Card, Sample Board and Method of Attaching Samples.

to fasten them. Hardware of this character is well adapted to display, and a variety of designs and finishes may be shown to good advantage. Similarly Drawer Knobs, Fig. 11, are screwed into the front of the shelf boxes, just as in actual use, different sizes of the same design being kept together in one box. Fig. 12 shows how a shelf box is divided by a partition when it contains articles of more than one design. As a rule, however, no subdivision is necessary in the boxes, as it is thought preferable to have them small and give each article or design a box by itself.

### CARE OF SAMPLES.

Great care is taken not to damage samples, as, for example, in the case of Rules. The section of shelving

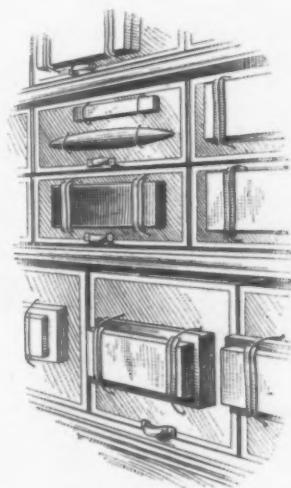


Fig. 14.—Samples of Oilstones, Protected by Leather Strips.

devoted to this line is shown in Fig. 13, including the sample board, price card and the two trays or shallow drawers in which the Rules are kept. The method of attaching the Rules by wire loops might scar them or nick the edges, making them unsalable. They are therefore held in place by square Screw Hooks, which they can rest on lightly without danger of damage. The two trays in which the Rules are kept are divided transversely into 12 compartments each, one tray containing Zig-zag Rules of different lengths and the other Boxwood Rules of various styles. By referring to the cut it will be

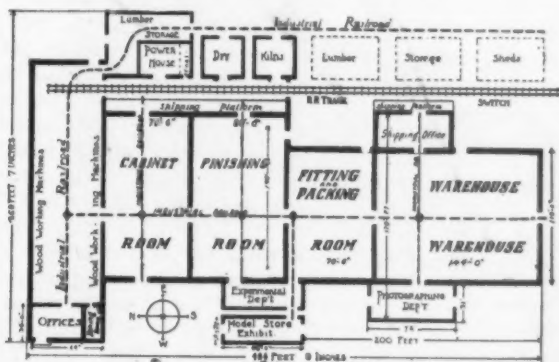
seen that the compartments of the former tray are marked to indicate the length of the Rules in feet, while in the latter tray the compartments carry the manufacturers' numbers representing the style and finish of the Rules. Oil Stones are another line requiring care in attaching the samples. The method of doing this is

Bucks	Tanged	Firmer	Gouges	HANDLED	* 8
SIZE	LIST	DISC.	COST	SELL. DOZ.	Sell each
1/8	3.15	NG. 2-4	A. 7-77	117 1/2	60-15
3/16	3.50	NG. 2-4	A. 7-77	117 1/2	60-15
1/4	4.00	NG. 2-4	A. 7-77	117 1/2	60-15
5/16	4.50	NG. 2-4	A. 7-77	117 1/2	60-15
3/8	5.00	NG. 2-4	A. 7-77	117 1/2	60-15
1/2	5.50	NG. 2-4	A. 7-77	117 1/2	60-15
3/4	6.00	NG. 2-4	A. 7-77	117 1/2	60-15
1	6.50	NG. 2-4	A. 7-77	117 1/2	60-15
1 1/4	7.00	NG. 2-4	A. 7-77	117 1/2	60-15
1 1/2	7.50	NG. 2-4	A. 7-77	117 1/2	60-15
1 3/4	8.00	NG. 2-4	A. 7-77	117 1/2	60-15
2	8.50	NG. 2-4	A. 7-77	117 1/2	60-15
2 1/4	9.00	NG. 2-4	A. 7-77	117 1/2	60-15
2 1/2	9.50	NG. 2-4	A. 7-77	117 1/2	60-15
2 3/4	10.00	NG. 2-4	A. 7-77	117 1/2	60-15
3	10.50	NG. 2-4	A. 7-77	117 1/2	60-15
3 1/4	11.00	NG. 2-4	A. 7-77	117 1/2	60-15
3 1/2	11.50	NG. 2-4	A. 7-77	117 1/2	60-15
3 3/4	12.00	NG. 2-4	A. 7-77	117 1/2	60-15
4	12.50	NG. 2-4	A. 7-77	117 1/2	60-15
4 1/4	13.00	NG. 2-4	A. 7-77	117 1/2	60-15
4 1/2	13.50	NG. 2-4	A. 7-77	117 1/2	60-15
4 3/4	14.00	NG. 2-4	A. 7-77	117 1/2	60-15
5	14.50	NG. 2-4	A. 7-77	117 1/2	60-15
5 1/4	15.00	NG. 2-4	A. 7-77	117 1/2	60-15
5 1/2	15.50	NG. 2-4	A. 7-77	117 1/2	60-15
5 3/4	16.00	NG. 2-4	A. 7-77	117 1/2	60-15
6	16.50	NG. 2-4	A. 7-77	117 1/2	60-15
6 1/4	17.00	NG. 2-4	A. 7-77	117 1/2	60-15
6 1/2	17.50	NG. 2-4	A. 7-77	117 1/2	60-15
6 3/4	18.00	NG. 2-4	A. 7-77	117 1/2	60-15
7	18.50	NG. 2-4	A. 7-77	117 1/2	60-15
7 1/4	19.00	NG. 2-4	A. 7-77	117 1/2	60-15
7 1/2	19.50	NG. 2-4	A. 7-77	117 1/2	60-15
7 3/4	20.00	NG. 2-4	A. 7-77	117 1/2	60-15
8	20.50	NG. 2-4	A. 7-77	117 1/2	60-15
8 1/4	21.00	NG. 2-4	A. 7-77	117 1/2	60-15
8 1/2	21.50	NG. 2-4	A. 7-77	117 1/2	60-15
8 3/4	22.00	NG. 2-4	A. 7-77	117 1/2	60-15
9	22.50	NG. 2-4	A. 7-77	117 1/2	60-15
9 1/4	23.00	NG. 2-4	A. 7-77	117 1/2	60-15
9 1/2	23.50	NG. 2-4	A. 7-77	117 1/2	60-15
9 3/4	24.00	NG. 2-4	A. 7-77	117 1/2	60-15
10	24.50	NG. 2-4	A. 7-77	117 1/2	60-15
10 1/4	25.00	NG. 2-4	A. 7-77	117 1/2	60-15
10 1/2	25.50	NG. 2-4	A. 7-77	117 1/2	60-15
10 3/4	26.00	NG. 2-4	A. 7-77	117 1/2	60-15
11	26.50	NG. 2-4	A. 7-77	117 1/2	60-15
11 1/4	27.00	NG. 2-4	A. 7-77	117 1/2	60-15
11 1/2	27.50	NG. 2-4	A. 7-77	117 1/2	60-15
11 3/4	28.00	NG. 2-4	A. 7-77	117 1/2	60-15
12	28.50	NG. 2-4	A. 7-77	117 1/2	60-15
12 1/4	29.00	NG. 2-4	A. 7-77	117 1/2	60-15
12 1/2	29.50	NG. 2-4	A. 7-77	117 1/2	60-15
12 3/4	30.00	NG. 2-4	A. 7-77	117 1/2	60-15
13	30.50	NG. 2-4	A. 7-77	117 1/2	60-15
13 1/4	31.00	NG. 2-4	A. 7-77	117 1/2	60-15
13 1/2	31.50	NG. 2-4	A. 7-77	117 1/2	60-15
13 3/4	32.00	NG. 2-4	A. 7-77	117 1/2	60-15
14	32.50	NG. 2-4	A. 7-77	117 1/2	60-15
14 1/4	33.00	NG. 2-4	A. 7-77	117 1/2	60-15
14 1/2	33.50	NG. 2-4	A. 7-77	117 1/2	60-15
14 3/4	34.00	NG. 2-4	A. 7-77	117 1/2	60-15
15	34.50	NG. 2-4	A. 7-77	117 1/2	60-15
15 1/4	35.00	NG. 2-4	A. 7-77	117 1/2	60-15
15 1/2	35.50	NG. 2-4	A. 7-77	117 1/2	60-15
15 3/4	36.00	NG. 2-4	A. 7-77	117 1/2	60-15
16	36.50	NG. 2-4	A. 7-77	117 1/2	60-15
16 1/4	37.00	NG. 2-4	A. 7-77	117 1/2	60-15
16 1/2	37.50	NG. 2-4	A. 7-77	117 1/2	60-15
16 3/4	38.00	NG. 2-4	A. 7-77	117 1/2	60-15
17	38.50	NG. 2-4	A. 7-77	117 1/2	60-15
17 1/4	39.00	NG. 2-4	A. 7-77	117 1/2	60-15
17 1/2	39.50	NG. 2-4	A. 7-77	117 1/2	60-15
17 3/4	40.00	NG. 2-4	A. 7-77	117 1/2	60-15
18	40.50	NG. 2-4	A. 7-77	117 1/2	60-15
18 1/4	41.00	NG. 2-4	A. 7-77	117 1/2	60-15
18 1/2	41.50	NG. 2-4	A. 7-77	117 1/2	60-15
18 3/4	42.00	NG. 2-4	A. 7-77	117 1/2	60-15
19	42.50	NG. 2-4	A. 7-77	117 1/2	60-15
19 1/4	43.00	NG. 2-4	A. 7-77	117 1/2	60-15
19 1/2	43.50	NG. 2-4	A. 7-77	117 1/2	60-15
19 3/4	44.00	NG. 2-4	A. 7-77	117 1/2	60-15
20	44.50	NG. 2-4	A. 7-77	117 1/2	60-15
20 1/4	45.00	NG. 2-4	A. 7-77	117 1/2	60-15
20 1/2	45.50	NG. 2-4	A. 7-77	117 1/2	60-15
20 3/4	46.00	NG. 2-4	A. 7-77	117 1/2	60-15
21	46.50	NG. 2-4	A. 7-77	117 1/2	60-15
21 1/4	47.00	NG. 2-4	A. 7-77	117 1/2	60-15
21 1/2	47.50	NG. 2-4	A. 7-77	117 1/2	60-15
21 3/4	48.00	NG. 2-4	A. 7-77	117 1/2	60-15
22	48.50	NG. 2-4	A. 7-77	117 1/2	60-15
22 1/4	49.00	NG. 2-4	A. 7-77	117 1/2	60-15
22 1/2	49.50	NG. 2-4	A. 7-77	117 1/2	60-15
22 3/4	50.00	NG. 2-4	A. 7-77	117 1/2	60-15
23	50.50	NG. 2-4	A. 7-77	117 1/2	60-15
23 1/4	51.00	NG. 2-4	A. 7-77	117 1/2	60-15
23 1/2	51.50	NG. 2-4	A. 7-77	117 1/2	60-15
23 3/4	52.00	NG. 2-4	A. 7-77	117 1/2	60-15
24	52.50	NG. 2-4	A. 7-77	117 1/2	60-15
24 1/4	53.00	NG. 2-4	A. 7-77	117 1/2	60-15
24 1/2	53.50	NG. 2-4	A. 7-77	117 1/2	60-15
24 3/4	54.00	NG. 2-4	A. 7-77	117 1/2	60-15
25	54.50	NG. 2-4	A. 7-77	117 1/2	60-15
25 1/4	55.00	NG. 2-4	A. 7-77	117 1/2	60-15
25 1/2	55.50	NG. 2-4	A. 7-77	117 1/2	60-15
25 3/4	56.00	NG. 2-4	A. 7-77	117 1/2	60-15
26	56.50	NG. 2-4	A. 7-77	117 1/2	60-15
26 1/4	57.00	NG. 2-4	A. 7-77	117 1/2	60-15
26 1/2	57.50	NG. 2-4	A. 7-77	117 1/2	60-15
26 3/4	58.00	NG. 2-4	A. 7-77	117 1/2	60-15
27	58.50	NG. 2-4	A. 7-77	117 1/2	60-15
27 1/4	59.00	NG. 2-4	A. 7-77	117 1/2	60-15
27 1/2	59.50	NG. 2-4	A. 7-77	117 1/2	60-15
27 3/4	60.00	NG. 2-4	A. 7-77	117 1/2	60-15
28	60.50	NG. 2-4	A. 7-77	117 1/2	60-15
28 1/4	61.00	NG. 2-4	A. 7-77	117 1/2	60-15
28 1/2	61.50	NG. 2-4	A. 7-77	117 1/2	60-15
28 3/4	62.00	NG. 2-4	A. 7-77	117 1/2	60-15
29	62.50	NG. 2-4	A. 7-77	117 1/2	60-15
29 1/4	63.00	NG. 2-4	A. 7-77	117 1/2	60-15
29 1/2	63.50	NG. 2-4	A. 7-77	117 1/2	60-15
29 3/4	64.00	NG. 2-4	A. 7-77	117 1/2	60-15
30	64.50	NG. 2-4	A. 7-77	117 1/2	60-15
30 1/4	65.00	NG. 2-4	A. 7-77	117 1/2	60-15
30 1/2	65.50	NG. 2-4	A. 7-77	117 1/2	60-15
30 3/4	66.00	NG. 2-4	A. 7-77	117 1/2	60-15
31	66.50	NG. 2-4	A. 7-77	117 1/2	60-15
31 1/4	67.00	NG. 2-4	A. 7-77	117 1/2	60-15
31 1/2	67.50	NG. 2-4	A. 7-77	117 1/2	60-15
31 3/4	68.00	NG. 2-4	A. 7-77	117 1/2	60-15
32	68.50	NG. 2-4	A. 7-77	117 1/2	60-15
32 1/4	69.00	NG. 2-4	A. 7-77	117 1/2	60-15
32 1/2	69.50	NG. 2-4	A. 7-77	117 1/2	60-15
32 3/4	70.00	NG. 2-4	A. 7-77	117 1/2	60-15
33	70.50	NG. 2-4	A. 7-77	117 1/2	60-15
33 1/4	71.00	NG. 2-4	A. 7-77	117 1/2	60-15
33 1/2	71.50	NG. 2-4	A. 7-77	117 1/2	60-15
33 3/4	72.00	NG. 2-4	A. 7-77	117 1/2	60-15
34	72.50	NG. 2-4	A. 7-77	117 1/2	60-15
34 1/4	73.00	NG. 2-4	A. 7-77	117 1/2	60-15
34 1/2	73.50	NG. 2-4	A. 7-77	117 1/2	60-15
34 3/4	74.00	NG. 2-4	A. 7-77	117 1/2	60-15
35	74.50	NG. 2-4	A. 7-77	117 1/2	60-15
35 1/4	75.00	NG. 2-4	A. 7-77	117 1/2	60-15
35 1/2	75.50	NG. 2-4	A. 7-77	117 1/2	60-15
35 3/4	76.00	NG. 2-4	A. 7-77	117 1/2	60-15
36	76.50	NG. 2-4	A. 7-77	117 1/2	60-15
36 1/4	77.00	NG. 2-4	A. 7-77	117 1/2	60-15
36 1/2	77.50	NG. 2-4	A. 7-77	117 1/2	60-15
36 3/4	78.00	NG. 2-4	A. 7-77	117 1/2	60-15
37	78.50	NG. 2-4	A. 7-77	117 1/2	60-15
37 1/4	79.00	NG. 2-4	A. 7-77	117 1/2	60-15
37 1/2	79.50	NG. 2-4	A. 7-77	117 1/2	60-15
37 3/4	80.00	NG. 2-4	A. 7-77	117 1/2	60-15
38	80.50	NG. 2-4	A. 7-77	117 1/2	60-15
38 1/4	81.00	NG. 2-4	A. 7-77	117 1/2	60-15
38 1/2	81.50	NG. 2-4	A. 7-77	117 1/2	60-15
38 3/4	82.00	NG. 2-4	A. 7-77	117 1/2	60-15
39	82.50	NG. 2-4	A. 7-77	117 1/2	60-15
39 1/4	83.00	NG. 2-4	A. 7-77	117 1/2	60-15
39 1/2	83.50	NG. 2-4	A. 7-77	117 1/2	60-15
39 3/4	84.00	NG. 2-4	A. 7-77	117 1/2	60-15
40	84.50	NG. 2-4	A. 7-77	117 1/2	60-15
40 1/4	85.00	NG. 2-4	A. 7-77	117 1/2	60-15
40 1/2	85.50	NG. 2-4	A. 7-77	117 1/2	60-15
40 3/4	86.00	NG. 2-4	A. 7-77	117 1/2	60-15
41	86.50	NG. 2-4	A. 7-77	117 1/2	60-15
41 1/4	87.00	NG. 2-4	A. 7-77	117 1/2	60-15
41 1/2	87.50	NG. 2-4	A. 7-77	117 1/2	60-15
41 3/4	88.00	NG. 2-4	A. 7-77	117 1/2	60-15
42	88.50	NG. 2-4	A. 7-77	117 1/2	60-15
42 1/4	89.00	NG. 2-4	A. 7-77	117 1/2	60-15
42 1/2</					



## NEW PLANT OF J. D. WARREN MFG. COMPANY.

IN the purchase of what is known as the "Old Warrington" plant, the J. D. Warren Mfg. Company, Quincy, Ill., has secured proper accommodations, for the present at least, for the manufacture of its product, consisting of Store Cabinets and Shelving. The inadequate size and facilities of the old plant, which have been keenly felt for some time, have been strongly pronounced during the first quarter of the present year, when orders, it is stated, exceeded the same period of the previous year by 40 per cent. The new plant occupies a site of about 5 acres. Ten buildings, or departments, housed under one roof, occupy a total space of 400 to 500 feet in length and 200 to 350 feet in width, and are constructed of high grade pressed brick, with stone foundations. An industrial railway track extends to all departments, having frequent turntables for spurs into side rooms and various isolated points. Access to outside transportation is secured by means of a private switch track extending, under roof, the entire length of the building at one side and separating the building from one of its wings. In this wing the lumber is unloaded from the



New Plant of J. D. Warren Mfg. Company.

cars, and from the piles slid into the dry kilns, thence into a storage room of 15 cars capacity, which is heated with steam pipes and well ventilated for the proper curing of the lumber. From the curing room the lumber is passed into the machine department, from there into the glueing room, thence into the cabinet department, and finally into the finishing room, where, after being completed, it is stored in a room 200 x 100 feet, having a shipping room annex 80 x 30 feet, which opens on to the railroad track. Storage capacity is therefore provided for 15 cars of lumber, which receives at least 18 months' curing, and for 20 to 30 cars of finished cabinets ready for immediate shipment. All manufacturing is done on one floor. Each cabinet bench is provided with floor space 15 feet square, avoiding crowding of the workmen and facilitating the work. The offices will occupy two floors, 32 x 60 feet, and will be complete in every detail. Well arranged designing and drafting rooms are also afforded, as well as reception and observation galleries that overlook the work rooms. Each employee will be provided with a locker, and washrooms and bathrooms are furnished for their free use. One of the features of the plant is a dining room, where noon lunches will be served at cost, and in the morning before commencing work hot coffee will be served gratis. A novel feature of the plant will be a "Model Hardware Store," 66 feet long, 22 feet wide and 14 feet high, which will be equipped in accordance with approved ideas of model Hardware store shelving. Electric power, by which the plant is operated, will be brought into use in driving the movable shelves and cabinets containing displays of Guns, Ammunition, Cutlery and other lines, and a movable platform will hold such lines as Stoves, illustrating the ease and facility with which all parts can be inspected. The Warrington plant was built in 1901-2 for the manufacture of gasoline engines.

THE NATIONAL SWEEPER COMPANY, Marion, Ind., which recently sustained almost the entire destruction of its

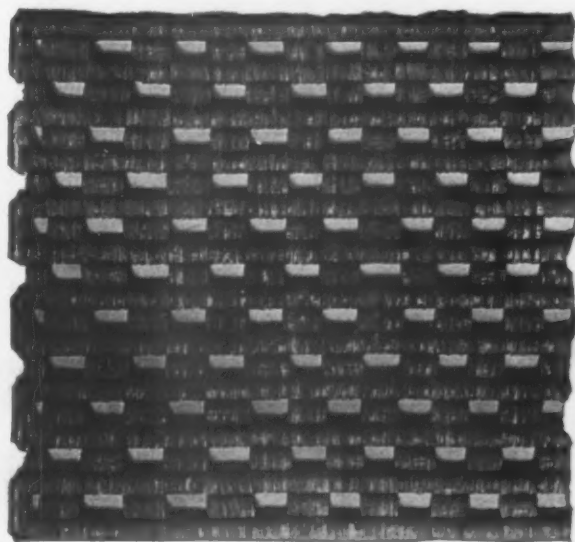
plant by fire, will, as soon as insurance matters can be adjusted, take steps to rebuild on a larger scale. The loss by fire was complete with the exception of the wood working department and a part of the finishing section and included every one of the numerous special machines which had been designed and made at considerable cost.

## MARSHALL-WELLS HARDWARE COMPANY'S CATALOGUE.

MARSHALL-WELLS HARDWARE COMPANY, Duluth, Minn., has just issued a fine new illustrated catalogue of Builders' Hardware, containing 414 large pages. Some of the distinctive features are a full description of various goods that will be helpful to the merchant and an alphabetical index, which is copiously cross indexed to show contents under different accepted trade names, any word repeated one or more times being put in heavy type. In addition to the 30 columns of alphabetical index there is an alphabetical design index, numerical index of Cabinet and Trunk Locks, explanatory matter regarding hang of doors, suggestions for taking off Hardware and a dictionary of technical terms. The catalogue is copyrighted and a patent has been applied for in connection with the numbering system. Important lines of other general Hardware are shown in the company's large catalogue.

### Ideal Leather Mat.

The mat illustrated herewith is made of links of belting leather joined together by wire rods. At the outside edges the links are bound with metal strips which connect the ends of the rods. The mat is referred to as combining the qualities of a soft mat and a hard one or scraper. Other advantages claimed are that it lies perfectly flat, never curls or breaks, and does not absorb dirt; that it is not affected by heat, cold or moisture, and



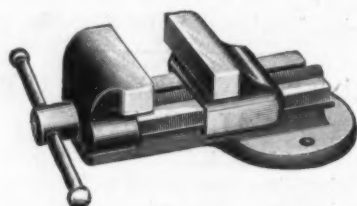
Ideal Leather Mat.

that it is light and flexible, being easily rolled up and stored when not in use. It can be made in any length or width, stock sizes ranging from 14 x 26 to 30 x 30 inches. The mat is made by New York Leather Belting Company, which is now at 8 Ferry street, but will remove to larger quarters at 51 Beekman street at an early date.

### Drill Vise.

The drill vise shown herewith, manufactured by the Bicknell Mfg. & Supply Company, Janesville, Wis., is designed for use by machinists, blacksmiths and users of drill presses. The vise is threaded in the center of the base to take a stud bolt or cap screw from the under side and will also swivel from the back bolt hole in the base, making it desirable for drill press use. As the back jaw is movable, perpendicular work is likewise brought in

the proper position outside of the drill table. The jaw is  $5\frac{1}{2}$  inches in width and opens 5 inches. The screw is  $\frac{3}{4}$  inch in diameter, has ten threads to the inch and has

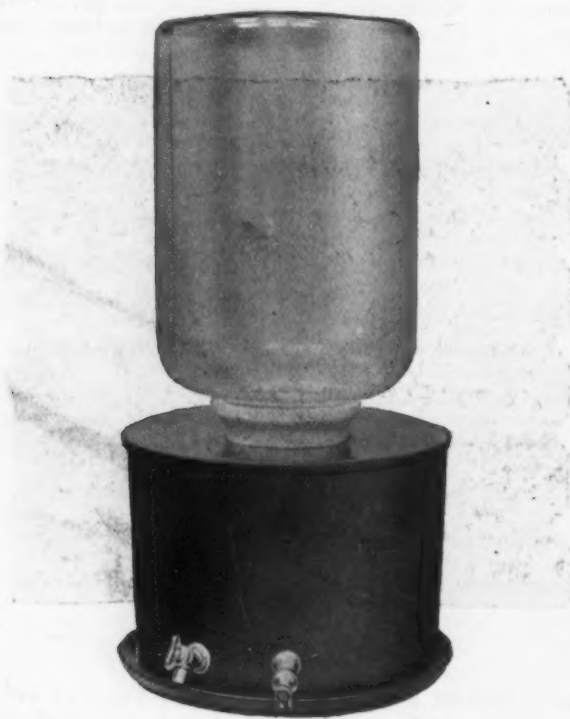


*Drill Vise.*

a detachable nut. The base, bed and jaws are planed. The weight of the vise is 30 pounds.

### Twentieth Century Bottle Coolers.

Cordley & Hayes, 172 Duane street, New York, have just put on the market the Twentieth Century bottle coolers here shown, for spring waters and any of the numerous beverages which are preferably served cooled. They are made in two sizes, No. 10 for 1-gallon bottles and No. 50, as illustrated, for 5-gallon bottles. The cooler is an indurated seamless fiber jar with a cover of the same material attached to the cooler, through which projects an earthen ware jar, which is white or porcelain glazed on the inner side. The faucet for drawing water or other liquid projects from the outside of the fiber cooler through the hole of the cooler into the inner or earthen ware jar, thus holding the jar rigid. The earthen ware jar has a large bell shaped top, in which is inserted a close fitting round rubber ring,  $\frac{1}{2}$  inch in diameter, on



*Twentieth Century Bottle Coolers.*

which the bottle rests. Half the fiber cover is loose, making easy the process of refilling the ice chamber surrounding the jar, which has its own faucet for drawing off the melted ice. Each cooler has a separate tray for protecting the receptacle on which the cooler stands. In use the outside cooler jar is filled with ice cracked in small pieces, and the bottle with its liquid contents to be chilled is inverted so that the bottle neck leads into the earthen ware receptacle. The No. 10 size takes any bottle having an outside diameter of not less than  $4\frac{1}{4}$  inches. The cooler measures 10 inches in diameter outside, is 9 inches high and will hold about 7 pounds of ice. The No. 50, as illustrated, is  $13\frac{1}{2}$  inches outside diameter, 10

inches high and will hold about 15 pounds of ice. Regularly both coolers are furnished in plain mahogany color or enameled white and striped in gold at a small additional cost. They can also be supplied with silver top to special order, and in silver finish instead of white enamel or any color in enamel finish for outside of the cooler can be matched if so specified in sufficient quantities.

### Diamond J Spring Oiler.

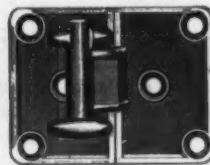
W. H. Johnson Mfg. Company, Urbana, Ohio, is marketing, under its brand of a diamond inclosing the letter "J," the spring oiler illustrated herewith. Its workmanship and material are described as the best, the construction being such that cans have been in service years without repair. The spring is of tempered brass spring wire. Smaller sizes are made of 2 X heavy dipped tin and 12-ounce solid sheet copper; larger sizes, of 3 X tin and 14-ounce copper. They are soldered throughout by hand. In referring to the advantages of this article the company states that it enables one to place the oil just where it is needed—not on the floor or on parts of the machinery that are better off without it; that oil does not run out if the can is accidentally overturned; the spring is so adjusted that it cannot be strained or broken, and the thumb lever is protected by the handle. If dirt or cinders get in the spout it is said that they can be easily removed and if the top spout is broken off or mashed it can be replaced at trifling expense.



*Diamond J Spring Oiler.*

### Diehl Storm Sash Hangers and Fasteners and Separable Hinge.

The two illustrations herewith presented represent in Fig. 1 the storm sash hangers and fasteners and in Fig. 2 the separable hinge, which are being manufactured and sold by the Diehl Novelty Company, Sheboygan, Wis. The hangers are of the ball and socket construction and made of malleable iron. The sockets are placed upon the upper window casing and the parts containing the balls are placed upon the upper end of the storm sash or screen, so that the sash can be hooked on either at right or left angles and swung around in position conveniently without twisting or mutilating its form. The fasteners are



*Fig. 1.—Diehl Storm Sash Hangers and Fasteners.*



*Fig. 2.—Diehl Separable Hinge.*

claimed to be made of the best steel spring wire and are so constructed that the sash cannot be blown off when extended. Claim is also made that the fastener locks with a powerful tension, without splitting or injuring the blind stops, so that when the sash is closed and locked it is perfectly tight. In the application of the fastener to the sash the slotted arm is fastened to the sash from 8 to 10 inches above the window sill, with clips designed for that purpose. The button is placed in the slotted arm when raised in a perpendicular position and allowed to rest in the bottom of the arm, where it is fastened to the blind stop. The separable hinges are made of malleable iron and are so constructed that doors can be taken off without removing the hinges, thus saving time and labor.



Sunshine Washing Machine.

The washing machine herewith illustrated, manufactured by A. G. McAusland & Co., Denver, Col., embodies novel features in washing machine construction. The tub is rectangular in shape, tapering from the top to the bottom and is made of corrugated galvanized iron. Fig. 1 shows the machine in position for operating. The wooden agitator is star shaped, as shown in Fig. 2, and the clothes are washed by contact with the sides and bottom of the



Fig. 1.—Sunshine Washing Machine.

tub. The machine is operated by means of a handle, and its manufacturers claim that the best results are obtained by making a quarter turn of the crank only. When not in use the tub can be stored away in the stand in which it

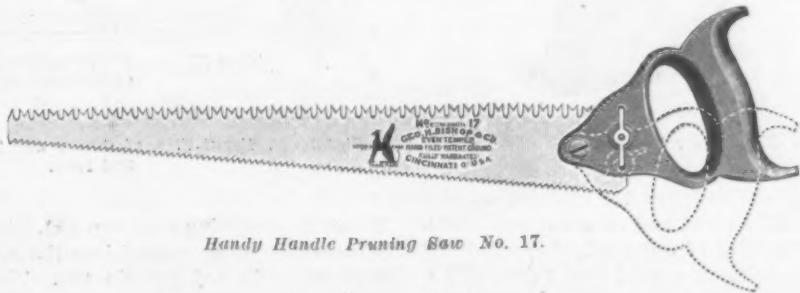


Fig. 2.—Sunshine Washer with Top Removed, Showing Mechanism.

is crated for shipment, and which also serves as a pedestal for the tub during the washing operation. If it is desired to keep the water warm while washing the tub can be set on a stove and the work carried on as conveniently as on the stand.

Handy Handle Pruning Saw.

A recent addition to the line of Geo. H. Bishop & Co., Lawrenceburg, Ind., is the Handy Handle Pruning Saw here shown. The handle is carved, with nickel trimmings, its feature being that it can be instantly swung to various angles, as indicated by the dotted lines, thus per-



Handy Handle Pruning Saw No. 17.

mitting the blade to occupy many different positions without interference. The blade itself is made of spring steel toothed on both edges, and sharpened ready for use. The

company is also making a No. 18 saw, embodying all the qualities of the No. 17, represented in the cut. The blade, however, is convex in form instead of straight, being toothed on its convex edge for a thrust cut, and on its concave edge for a draw cut, and is especially adapted for pruning trees and vines. Both styles are packed one-half dozen in box, and made in five and four lengths, respectively.

New Favorite Washer.

The New Favorite Washer, here illustrated, is made by R. M. Ball, Muncie, Ind. Fig. 1 represents the machine closed, as in operation, while Fig. 2 shows it with the



Fig. 1.—New Favorite Washer, Closed.

top open ready to receive clothes. The latter cut also affords a view of the hard wood rubbers oscillated by the handle, which work over a set of similar rubbers fixed in



Fig. 2.—New Favorite Washer, Open.

the concave bottom of the tub. The action of these two sets of rubbers on the clothes is described as almost identical with that of the knuckles of the hands on the wash-

the pressure of the rubbers rubbing on both sides of the clothes, which reverse at every forward and backward motion of the lever. The sides of the machine are made of one solid board of white wood, thoroughly kiln dried, which will not stain the clothes. The top, or cover, is made of the same material. The bottom is lined with galvanized steel. The machine is light in weight and easily taken apart for cleaning.

### Extension Arm Wall Mirror.

The line of metallic furniture manufactured by Ideal Register & Metallic Furniture Company, Detroit, Mich., includes the extension arm wall mirror illustrated in the



Extension Arm Wall Mirror.

accompanying cut. It has a hinged bracket plate, 12 inches in height, with an extension arm, adjustable from 7 to 48 inches in length, which can be swung against the wall on either side of the bracket plate. The mirror is of beveled plate, 10 x 14 inches oval, and the backing is three-ply veneer. Oxydized copper or nickel plate finish are furnished at the option of the purchaser. In referring to this article the company states that its strength and handsome appearance, as well as its many adjustments, make it a desirable store fixture and especially convenient for the bathroom or toilet room.

### The Little Giant Floor Scraper.

The floor scraper, shown in the accompanying illustration is designed for surfacing hard wood floors, and it is claimed can be successfully used on oak, maple, birch, yellow pine, beech and parquet floors. The knife being at-



Little Giant Floor Scraper.

tached to the front of the frame of the machine enables the operator to get in all corners and up to the baseboard, thus obviating the surfacing of any part of the floor by hand. The machine consists of a solid steel roller with a shaft running through its center, upon which is supported a cast steel frame. The bearings are of bronze, and two springs on either side interposed between them and the

frame enable the operator to tilt the knife to either side without the necessity of tilting the entire machine. The knife, which is slightly convex, thus preventing the scratching of floors with its corners, is bolted to the front of the frame and is adjustable, and when the machine is in position is raised  $\frac{1}{8}$  inch from the floor. Two small wheels adjusted to the frame in the rear of the roller serve as a balance for the former. The handle is likewise adjustable, and can be shortened for use in small rooms where it would be inconvenient to operate with the handle at its full length. The small balance wheels as well as the roller have rubber tires, offering ample protection to the floors. This machine is manufactured by the Hurley Machine Company, 153-159 South Jefferson street, Chicago, and an Eastern office has recently been opened at 1010 Flatiron Building, New York City.

### Jubilee Self Heating Gas Sad Iron.

The Jubilee Mfg. Company, Omaha, Neb., has put on the market the Jubilee self heating gas sad iron, here illustrated. The marked feature of this novelty is the rapidity and freedom from unnecessary heat with which the individual can accomplish the ironing of a week's washing. The iron can also be used in regular laundries independently of iron heating stoves. This self contained device consists of a burner attached to a gasoline tank

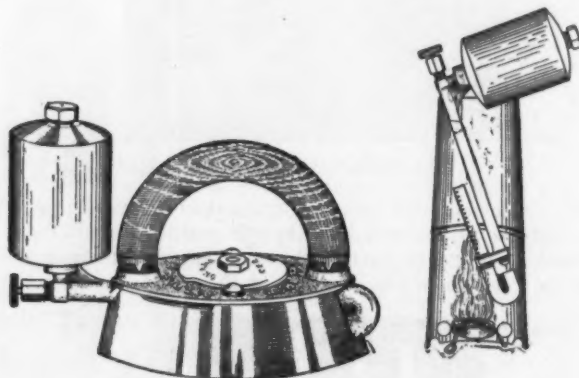


Fig. 1.—Jubilee Self Heating Gas Iron.

Fig. 2.—Warming Burner, to Vaporize Gasoline.

of heavy spun copper, securely brazed, tested to 100 pounds pressure to the square inch and warranted not to leak. In use the tank pressure is said not to exceed 10 pounds per square inch, a further guarantee of safety being a safety fuse in the tank cap which automatically relieves pressure in the tank long before it could accomplish

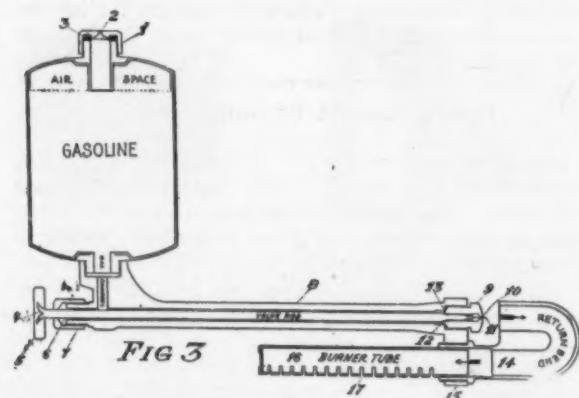


Fig. 3.—Sectional View of Burner and Tank Detached from Sad Iron.

harm. By removing tank cap (1), Fig. 3, six fluid ounces of gasoline can be poured into the reservoir, first closing valve rod (4) and gas tip (9). Then the two sections of tin tubes, which are a part of the equipment, Fig. 2, are connected and the alcohol torch cup filled with a tablespoonful of wood alcohol from a sample bottle sup-



plied with the iron. After lighting the alcohol the burner, Fig. 3, is inserted in the tin tube to heat it, care being taken to see that the valve rod controlling the supply of gasoline to the burner is closed. The heat from the alcohol flame soon warms the burner sufficiently to vaporize or make gaseous the volatile gasoline, when the burner, with tank attached, is inserted in the iron, the jet of flame being regulated at will, according to service required, by the valve rod (4). The iron, burner and tank complete weigh but 6 pounds and are especially well balanced. The valve rod is operated from the coal end of the generator, where the packing does not burn out. The needle point (11) attached to the valve rod (4) is of flexible steel wire of uniform diameter throughout, and by screwing and unscrewing the valve rod it automatically cleans the orifice or hole in the tip without enlarging the orifice. The packing is an asbestos preparation made especially for the Jubilee iron, and, fairly handled, will last a long time. Among the advantages of this

laundry iron pointed out by the company are that varying degrees of heat can be quickly obtained by a turn of the valve rod; in warm weather the ironing can be done in a cool place with a great saving of fuel; a hot iron with cool handle is always available; a uniform heat can be maintained, and the article is of convenient size and weight.

ALUMINUM NOVELTIES for advertising purposes and general distribution are shown in a recent catalogue issued by the New Jersey Aluminum Company, Newark, N. J. The advertising novelties range in size from a 5-inch paper cutter of plain design to elaborate calendar stands and desk pads of aluminum. The general stock is made up of trays, fancy articles, miscellaneous goods, picture frames, toilet articles, sporting goods, household aluminum supplies, as well as hollow ware for general household use. The company also makes a specialty of difficult aluminum castings.

## PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

Linseed, City, raw.....	42	@43
Linseed, City, Boiled.....	43	@44
Linseed, State and West'n, raw.....	39	@40
Linseed, raw Calcutta seed.....	40	@41
Lard, Extra Prime, Winter.....	71	@72
Lard, Extra No. 1.....	38	@39
Lard, No. 1.....	38	@40
Cotton-seed, Crude, f.o.b. mills.....	30	@31
Cotton-seed, Summer Yellow.....	36	@37
Cotton-seed, Summer Yellow, off grades.....	36	@37
Sperm, Crude.....	53	@54
Sperm, Natural Spring.....	53	@54
Sperm, Bleached Spring.....	53	@54
Sperm, Natural Winter.....	61	@62
Sperm, Bleached Winter.....	61	@62
Tallow, Prime.....	51	@52
Whale, Crude.....	31	@32
Whale, Natural Winter.....	38	@39
Whale, Bleached Winter.....	40	@41
Extra Bleached Winter.....	44	@45
Menhaden, Brown, Strained.....	26	@27
Menhaden, Light, Strained.....	27	@28
Menhaden, Bleached, Winter.....	32	@33
Menhaden, Ex-Bld., Winter.....	34	@35
Menhaden, Southern.....	34	@35
Cocanut, Ceylon.....	64	@65
Cocanut, Ceylon.....	64	@65
Cocanut, Ceylon.....	64	@65
Cod, Domestic, Prime.....	33	@34
Cod, Newfoundland.....	36	@37
Red, Elaine.....	35	@36
Red, Saponified.....	43	@44
Olive, Italian, bbls.....	57	@58
Neatsfoot, prime.....	48	@49
Palm, Logos.....	64	@65

### Mineral Oils—

Black, 29 gravity, 25@30 cold test.....	10 1/2	@11 1/2
Black, 29 gravity, 15 cold test.....	11 1/2	@12 1/2
Black, Summer.....	10 1/2	@11 1/2
Cylinder, light filtered.....	18	@19
Cylinder, dark filtered.....	16	@17
Paraffine, 903-907 gravity.....	13 1/2	@14 1/2
Paraffine, 903 gravity.....	12 1/2	@13 1/2
Paraffine, 883 gravity.....	10 1/2	@11 1/2
Paraffine, Red.....	12 1/2	@13 1/2

In small lots 1/4¢ advance.

### Miscellaneous—

Barytes.....	17.50	@19.00
White, Foreign.....	17.50	@19.00
Amer. floated.....	19.00	@20.00
Off color, No. 2.....	13.50	@15.00
Chalk, in bulk.....	3.00	@3.25
Chalk, in bbls.....	3.00	@3.25
China Clay, English.....	12.00	@13.00
Cobalt, Oxide.....	2.50	@2.60
Whiting, Common.....	1.43	@1.48
Whiting, Gilders.....	1.50	@1.55
Whiting, Ex. Gilders.....	1.55	@1.60

### Putty, Commercial—

In bladders.....	1.70	@1.85
In bbls. or tubs.....	1.20	@1.40
In 1 lb to 5 lb cans.....	2.65	@2.95
In 12 1/2 to 50 lb cans.....	1.50	@1.90

### Spirits Turpentine—

In Oil bbls.....	69 1/2	@70
In Oil bbls.....	70	@70 1/2

### Glue—

Cabinet.....	11	@15
Common Bone.....	7	@9
Extra White.....	18	@24
Foot Stock, White.....	11	@14
Foot Stock, Brown.....	8	@11
German Hide.....	12	@18
French.....	10	@40
Irish.....	13	@16
Low Grade.....	9	@12
Medium White.....	11	@17

### Gum Shellac—

Bleached Commercial.....	39	@41
Bone Dried.....	49	@51
Button.....	42	@43
Diamond.....	53	@54
Fine Orange.....	46	@50
A. C. Garnet.....	41	@42
D. C.....	60	@61
Octagon B.....	42	@43
T. N.....	42	@43
V. S. O.....	54	@55

### Colors in Oil—

Black, Lampblack.....	12	@14
Blue, Chinese.....	36	@46
Blue, Prussian.....	32	@38

Blue, Ultramarine.....	13	@16
Brown, Vandyke.....	11	@14
Green, Chrome.....	12	@16
Green, Paris.....	21	@24
Sienna, Raw.....	12	@15
Sienna, Burnt.....	12	@15
Umber, Raw.....	11	@14
Umber, Burnt.....	11	@14

### White Lead, Zinc, &c.—

Lead, English white, in Oil.....	9 1/2	@9 3/4
Lead, American white, in Oil.....	9 1/2	@9 3/4
Lots of 500 lb or over.....	7 1/4	@7 1/2
Lots less than 500 lb.....	7 1/4	@7 1/2
In Barrels.....	6 1/2	@6 3/4
Lead, White, in oil, 25 lb tin pails, add to keg price.....	1 1/2	@1 3/4
Lead, White, in oil, 12 1/2 lb tin pails, add to keg price.....	1	@1 1/2
Lead, White, in oil, 1 to 5 lb pails, add to keg price.....	1 1/2	@1 3/4
Lead, American, Terms: For lots 12 tons and over 1/4¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.....	6 1/2	@6 3/4

Lead, White, Dry, in bbls.....	4	@5
Zinc, American, dry.....	4 1/2	@5
Paris, Red Seal, dry.....	9 1/2	@10 1/2
Paris, Green Seal, dry.....	10 1/2	@11 1/2
Antwerp, Red Seal, dry.....	8 1/2	@9 1/2
Antwerp, Green Seal, dry.....	9 1/2	@10 1/2
Green Seal.....	9 1/2	@10 1/2
Lots of 1 ton and over.....	12 1/2	@13 1/2
Lots of less than 1 ton.....	12 1/2	@13 1/2
Zinc, V. M. French, in Poppy Oil.....	12 1/2	@13 1/2
Red Seal.....	12 1/2	@13 1/2
Lots of 1 ton and over.....	11 1/2	@12 1/2
Lots of less than 1 ton.....	11 1/2	@12 1/2
Discounts—French Zinc—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1% 25 bbls., 2% 50 bbls., 4%.....	11 1/2	@12 1/2

### Dry Colors—

Black, Carbon.....	5	@10
Black, Drop, American.....	4	@6
Black, Drop, English.....	5	@15
Black, Ivory.....	16	@20

Lamp, Com.....	4 1/2	@6
Blue, Celestial.....	4	@6
Blue, Chinese.....	29	@32
Blue, Prussian.....	27	@30
Blue, Ultramarine.....	4 1/2	@15
Brown, Spanish.....	1 1/2	@1
Carmine, No. 40.....	3.30	@3.40
Green, Chrome, ordinary.....	3 1/2	@6
Green, Chrome, pure.....	17	@25
Lead, Red, bbls., 1/2 bbls. and kegs: Lots 500 lb or over.....	7 1/4	@7 1/2
Lots less than 500 lb.....	7 1/4	@7 1/2
Litharge, American, bbls.....	7 1/4	@7 1/2
Ocher, American.....	14	@16.00
Ocher, American Golden.....	2 1/2	@3 1/2
Ocher, French.....	14	@2 1/2
Ocher, Foreign Golden.....	3	@4
Orange Mineral, English.....	10	@12
Orange Mineral, French.....	10 1/2	@12
Orange, Mineral, German.....	8 1/2	@10
Orange, Mineral, American.....	8 1/2	@10
Red, Indian, English.....	4 1/2	@8 1/2
Red, Indian, American.....	3	@3 1/2
Red, Turkey, English.....	4	@10
Red, Tuscan, English.....	7	@10
Red, Venetian, Amer.....	100 lb \$0.50	@1.25
Red, Venetian, English.....	100 lb \$1.15	@1.75
Sienna, Italian, Burnt and Powdered.....	3	@9 1/2
Sienna, Ital., Raw Powd.....	3	@6 1/2
Sienna, American, Raw.....	1 1/2	@2
Sienna, American, Burnt and Powdered.....	1 1/2	@2
Talc, French.....	15.00	@30.00
Talc, American.....	15.00	@25.00
Terra Alba, French.....	100 lb 90	@1.00
Terra Alba, English.....	100 lb 90	@1.00
Terra Alba, American.....	100	@1.00
Terra Alba, No. 1.....	70	@80
Terra Alba, American.....	100	@80
Umber, Turkey, Bnt. & Pow.....	2 1/2	@3 1/2
Umber, Turkey, Raw & Pow.....	2 1/2	@3 1/2
Umber, Burnt, Amer.....	1 1/2	@2
Umber, Raw, Amer.....	1 1/2	@2
Yellow, Chrome.....	12	@14
Vermilion, American Lead.....	10	@25
Vermilion, Quicksilver, bulk.....	66	@65
Vermilion, Quicksilver, bags.....	66	@65
Vermilion, English, Import.....	75	@80
Vermilion, Chinese.....	90	@100

# THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

ISSUED EVERY THURSDAY MORNING.

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ENTERED AT THE POST OFFICE, NEW YORK, AS SECOND-CLASS MATTER.

# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33 $\frac{1}{2}$ ¢, @ 33 $\frac{1}{2}$ ¢, & 10% signifies

that the price of the goods in question ranges from 33 $\frac{1}{2}$ ¢ per cent. discount to 33 $\frac{1}{2}$ ¢, and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1905, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Domestic,  $\frac{1}{2}$  doz. \$3.00.....33 $\frac{1}{2}$ ¢  
North's.....10%  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent.....35%  
Taplin's Perfection.....35%

**Ammunition**—See Caps, Cartridges, Shells, &c.

## Anvils—American—

Eagle Anvils..... $\frac{1}{2}$  lb 6 $\frac{1}{2}$ ¢  
Hay-Budden, Wrought.....90 $\frac{1}{2}$ ¢  
Horseshoe brand, Wrought.....90 $\frac{1}{2}$ ¢  
Treutou..... $\frac{1}{2}$  lb 9 $\frac{1}{2}$ ¢

## Imported—

Peter Wright & Sons..... $\frac{1}{2}$  lb 10 $\frac{1}{2}$ ¢

## Anvil, Vise and Drill—

Millers Falls Co., \$18.00.....15¢10%

## Apple Parers—See Parers.

## Aprons, Blacksmiths'—

Livingston Nail Co.....33 $\frac{1}{2}$ ¢

## Augers and Bits—

Com. Double Spur.....75¢75¢5%

Jennings' Patn., reg. finish.....50¢19¢10%

Black Lip or Blued.....60¢10%

Boring Mach. Augers.....70¢10%

Car Bits, 12-in. twist.....50¢10%

Ford's Auger and Car Bits.....40¢5%

Forster Pat. Auger Bits.....25%

C. E. Jennings & Co.:  
No. 10 ext. lip, R. Jennings' list.....25%

No. 30, R. Jennings' list.....40¢7 $\frac{1}{2}$ ¢

Russell Jennings.....25¢10¢2 $\frac{1}{2}$ ¢

L'Hommedieu Car Bits.....15%

Mayhew's Counterank Bits.....45%

Millers Falls.....50¢10¢7 $\frac{1}{2}$ ¢

Ohio Tool Co.'s Bailey Auger and Car Bits.....40¢10%

Pugh's Blacksmith's Pattern.....20%

Snell's Auger Bits.....30%

Snell's Bell Hangers' Bits.....60%

Snell's Car Bits, 12-in. twist.....60¢10%

Wright's Jennings' Bits.....50%

## Bit Stock Drills—

See Drills, Twist.

## Expansive Bits—

Clark's small, \$18; large, \$25.....50¢10%

Clark's Pattern, No. 1,  $\frac{1}{2}$  doz. \$3.....45%

No. 2, \$18.....45%

Ford's, Clark's Pattern.....60¢5%

C. E. Jennings & Co., Steer's Pat.....40%

Swan's.....40%

## Gimlet Bits—

Per gro.

Common Dble. Out.....\$3.00@3.25

German Pattern, Nos. 1 to 10.....\$1.60; 11 to 15, \$1.75

## Hollow Augers—

Bonney Pat., per doz. \$5.50@6.00

Ames.....25¢10%

Universal.....20%

Wood's Universal.....25%

## Ship Augers and Bits—

Ship Augers.....\$5.45@—

Ford's.....33 $\frac{1}{2}$ ¢5%

C. E. Jennings & Co.:  
L'Hommedieu's.....15%

Watrous.....35¢5%

Ohio Tool Co.'s.....40%

Snell's.....40%

## Awl Hafts—See Handles, Mechanics' Tool.

## Awls—

Brad Awls:

Handled.....gro. \$2.75@3.00

Unhanded, Shlided.....gro. 63¢66¢

Unhanded, Patent.....gro. 60¢70¢

Peg Awls:

Unhanded, Patent.....gro. 31¢34¢

Unhanded, Shlided.....gro. 65¢70¢

Scratch Awls:

Handled, Com.....gro. \$3.50@4.00

Handled, Socket.....gro. \$11.50@12.00

Hurwood.....40%

## Awl and Tool Sets—See Sets, Awl and Tool.

## Axes—

See Grease, Axle

## Axles—

Concord, Loose Collar.....44¢44¢

Concord, Solid Collar.....44¢44¢

No. 1 Common, Loose.....34¢44¢

No. 1 $\frac{1}{2}$  Com., New Style 34¢44¢

No. 2 Solid Collar.....44¢44¢

Half Patent:

Nos. 7, 8, 11 and 12.....75¢75¢5%

Nos. 13 to 14.....70¢10¢75¢5%

Nos. 15 to 18.....75¢10¢75¢10¢5%

Nos. 19 to 22.....75¢10¢75¢10¢5%

## Boxes, Axle—

Common and Concord, not turned lb. 44¢5¢

Common and Concord, turned lb. 54¢6¢

Half Patent.....lb. 84¢9¢

## Bait—

Fishing—

Hendryx:

A Bait.....20%

B Bait.....25%

Competitor Bait.....20¢5%

## Balances—

Sash—

Caldwell new list.....50%

Pullman.....30¢10¢60%

## Spring—

Spring Balances.....50¢10¢60%

Chatillon's:

Light Spg. Balances.....40¢10%

Straight Balances.....40%

Circular Balances.....30%

Large Dial.....30%

## Barb Wire—See Wire, Barb.

## Bars—

Crow—

Steel Crowbars, 10 to 40 lb. per lb., 3¢3 $\frac{1}{2}$ ¢

## Towel—

No. 10 Ideal, Nickel Plate..... $\frac{1}{2}$  gro. \$3.50

## Beams, Scale—

Scale Beams.....40¢10¢50%

Chatillon's No. 1.....30%

Chatillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:  
No. 12 Wire Coppered  $\frac{1}{2}$  doz. \$0.85:

Tinned.....\$1.00

No. 11 Wire Coppered  $\frac{1}{2}$  doz. \$1.10:

Tinned.....\$1.20

No. 10 Wire Galvanized..... $\frac{1}{2}$  doz. \$1.75

Western W. G. Co.:  
No. 1 Electric..... $\frac{1}{2}$  gro. \$7.80

No. 2 Buffalo..... $\frac{1}{2}$  gro. \$9.00

No. 3 Perfection Dust..... $\frac{1}{2}$  gro. \$8.00

## Egg—

Holt-Lyon Co.:  
Holt, No. A, Japanned..... $\frac{1}{2}$  doz. \$1.20

Holt, No. 1, Tinned..... $\frac{1}{2}$  doz. \$1.50

Holt, No. B, Japanned..... $\frac{1}{2}$  doz. \$2.00

Holt, No. 2, Tinned..... $\frac{1}{2}$  doz. \$2.25

Lyon, No. 2, Japanned..... $\frac{1}{2}$  doz. \$1.25

Lyon, No. 3, Japanned..... $\frac{1}{2}$  doz. \$1.50

Taplin Mfg. Co.:  
No. 60 Improved Dover.....\$6.00

No. 75 Improved Dover.....\$6.50

No. 100 Improved Dover.....\$7.00

No. 102 Improved Dover, T'd.....\$8.50

No. 150 Improved Dover, Hotel.....\$15.00

No. 152 Imp'd Dover, Hotel, T'd.....\$17.00

No. 200 Imp'd Dover Tumbler.....\$8.50

No. 202 Imp'd Dover Tumbler, T'd.....\$9.50

No. 300 Imp'd Dover Mammoth.....\$25.00

doz.....\$25.00

Western W. G. Co., Buffalo.....\$7.00

Wonder (R. M. Co.)..... $\frac{1}{2}$  gro. net, \$6.00

## Bellows—

Blacksmith, Standard List.....60¢10¢70¢10%

## Hand—

Inch.....6 7 8 9 10

Doz.....\$4.75 5.70 6.65 7.60 8.85

## Molders—

Inch.....9 10 11 12 14

Doz.....\$8.00 9.00 10.50 12.50 14.50

## Bells—

Cow—

Ordinary goods.....75¢45¢75¢10¢45%

High grade.....70¢10¢70¢10¢45%

Jersey.....75¢10%

Texas Star.....50%

## Door—

Abbe's Gong.....45%

Burton Gong.....50%

Home, R. & E. Mfg. Co.'s.....55¢10%

Lever and Pull, Sargent's.....60¢10¢10%

Trip Gong.....50¢10¢50¢10¢45%

Yankee Gong.....55%

## Hand—

Hand Bells, Polished, Brass.....80¢10%

White Metal.....80%

Nickel Plated.....50¢10¢60%

Scales.....60¢60¢47 $\frac{1}{2}$ ¢

Cone's Globe Hand Bells.....33 $\frac{1}{2}$ ¢35%

Silver Chime.....33 $\frac{1}{2}$ ¢35%

## Miscellaneous

Farm Bells.....lb. 24¢

Steel Alloy Church and School.....50¢10¢60%

American Tube & Stamping Co. Gongs.....75%

Table Call Bells.....50¢50¢10%

## Belting—Leather—

Extra Heavy, Short Lap.....60¢5%

Regular Short Lap.....60¢10¢5%

Steward.....70%

Light Standard.....70¢5%

Cut Leather Lacing.....50%

Leather Lacing Sides, per sq. ft. 25¢

## Rubber—

Agricultural (Low Grade).....75¢75¢5%

Common Standard.....70¢70¢10%

Standard.....60¢5¢60¢10%

Extra.....60¢10¢5%

High Grade.....50¢5¢50¢10%

## Bench Stops—

See Stops, Bench

## Benders and Upsetters,

Tire—

Detroit Perfected Tire Bender.....40%

Detroit Stoddard's Lightning Tire Upsetters, No. 1, \$4.25; No. 2, \$7.25;

No. 3, \$10.50; No. 4, \$16.25; No. 5, \$20.50

Green River Tire Benders and Upsetters.....20%

## Bicycle Goods—

John S. Leng's Son's 1902 list:

Chain.....50%

Parts.....50%

Spokes.....50%

Tubes.....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

## Blocks—

Tackle—

Common Wooden.....70¢10¢75%

Hartz St. Tackle Blocks.....50¢50¢5%

B. & L. R. Co.:  
Boston Wood Snatch, 50%; Eclipse

Steel, 75%; Hollow Steel, 50¢10%

Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style

Steel, 50¢10%; Wire Rope Snatch, 50%

Lane's Patent Automatic Lock and Junior.....30%

Stowell's Novelty, Mal. Iron.....50¢10%

Stowell's Self Loading.....60%

See also Machines, Hoisting.

## Boards, Stove—

Zinc, Crystal, &c.....40%

Paper Embossed.....40¢10%

## Boards, Wash—

See Washboards.

## Bobs, Plumb—

Keuffel & Esser Co.....38 $\frac{1}{2}$ ¢

## Boils—

Carriage, Machine, &c.—



Gautier, Blunt.....40¢  
Gautier, Sharp.....40¢  
Perkins, Blunt Toe.....40¢  
Perkins, Sharp Toe.....40¢

**Can Openers—**  
See Openers, Can.  
**Cans, Milk—**

5 8 10 gal.  
Illinois Pattern.....\$1.35 1.85 2.05 each.  
New York Pattern.....1.50 2.20 2.45 each.  
Baltimore Pattern.....1.50 2.20 2.45 each.  
Dubuque.....1.35 1.60 1.75 each.

**Cans, Oil—**

Buffalo Family Oil Cans:  
3 5 10 gal.  
\$18.00 60.00 120.00 gro., net.

**Caps, Percussion—**

Eley's E. B.....50¢  
G. D.....per M 34¢  
F. L.....per M 40¢  
G. E.....per M 40¢  
Musket.....per M 68¢

**Primers—**  
Berdan Primers, \$2 per M.....20¢  
B. L. Caps (Sturtevant Shells).....20¢  
\$2 per M.....20¢  
All other primers per M.....\$1.50@1.60

**Cartridges—**

Blank Cartridges:  
\$2 C. F., \$5.50.....104.5¢  
\$2 C. F., \$7.00.....104.5¢  
\$2 cal. Rim, \$1.50.....104.5¢  
\$2 cal. Rim, \$2.75.....104.5¢  
B. B. Caps, Con. Ball, Supd.....\$1.49  
B. B. Caps, Round Ball.....\$1.49  
Central Fire.....25¢  
Target and Sporting Rifle.....15.45¢  
Primed Shells and Bullets.....15.45¢  
Rim Fire, Sporting.....50¢  
Rim Fire, Military.....15.45¢

**Casters—**

Bed.....70¢@70¢10¢  
Plate.....60¢10¢@60¢10¢  
Philadelphia.....75¢@75¢10¢  
Acme, Ball Bearing.....33¢  
Boss Anti-Friction.....104.10¢  
Gem (Roller Bearing).....80¢  
Martin's Patent (Phoenix).....45¢  
Standard Ball Bearing.....45¢  
Tucker's Patent low list.....30¢  
Yale (Double Wheel) low list.....50¢

**Cattle Leaders—**

See Leaders, Cattle.

**Chain, Coil—**

American Coil, Straight Link:  
3-16 1/4 5-16 3/4 7-16 9-16  
\$3.70 5.90 4.95 4.20 4.05 3.95 3.90  
5/8 3/4 1 1 1/4 to 1 1/2 inch.  
\$3.85 3.70 3.65 3.80

German Coil.....60¢10¢@60¢10¢

**Halter—**

Halter Chains.....60¢5¢@60¢10¢  
German Pattern Halter Chains,  
list July 24, '97.....60¢10¢@60¢10¢  
Covert Mfg. Co.....35¢5¢  
Halter.....70¢  
Covert's Saddlery Works.....70¢  
Halter.....70¢

**Cow Ties—**

See Halters and Ties.

**Trace, Wagon, &c.—**

Traces, Western Standard: 100 pr.  
6 1/4-6 3/4, Str'ght, with ring.....\$25.00  
6 1/4-6 2, Str'ght, with ring.....\$26.00  
6 1/4-6 2, Str'ght, with ring.....\$30.00  
6 1/4-10-2, Str'ght, with ring.....\$35.00  
NOTE—Add 2c per pair for Hooks.  
Twist Traces 2c per pair higher than  
Straight Link.

Eastern Standard Traces, Wag-  
on Chain, &c.....60¢10¢

**Miscellaneous—**

Jack Chain, list July 10, '93:  
Iron.....60¢10¢5¢@70¢  
Brass.....60¢10¢@60¢10¢  
Safety Chain.....75¢@75¢10¢  
Gal. Pump Chain.....lb. 4¢@4 1/2¢  
Covert Mfg. Co.:  
Breast, Halter, Heel, Rein, Stal-  
lion.....40¢  
Covert Saddle Works.....70¢  
Breast, Hold Back, Rein.....70¢  
Oneida Community:  
Am. Dog Leads and Kennel Chains,  
40¢@40¢5¢  
Niagara Dog Leads and Kennel  
Chains.....45¢@60¢5¢  
Wire Goods Co.:  
Dog Chain.....70¢10¢  
Universal Dbl.-Jointed Chain.....50¢

**Chain and Ribbon, Sash—**

Oneida Community:  
Copper Chain.....60¢5¢  
Steel Chain.....60¢  
Pullman:  
Bronze Chain.....60¢  
Steel Chain.....60¢10¢  
Sash Chain Attachments, per set.....8¢  
Aluminum Sash Ribbon, per 100  
ft.....\$1.25@3.00  
Sash Ribbon Attachments, per set.....8¢

**Chalk—(From Jobbers.)**

Carpenters' Blue.....gro. 38¢@40¢  
Carpenters' Red.....gro. 35¢@36¢  
Carpenters' White.....gro. 28¢@30¢  
See also Crayons.

**Checks, Door—**

Hardley's.....43¢  
Eclipse.....40¢10¢  
Pullman, per gro.....\$4.00  
Russwin.....40¢

**Chests, Tool—**

American Tool Chest Co.:  
Boys' Chests, with Tools.....55¢  
Youths' Chests, with Tools.....40¢  
Gentlemen's Chests, with Tools.....30¢  
Farmers' Carpenters', etc., Chests,  
with Tools.....20¢  
Machinists' and Pipe Fitters'  
Chests, Empty.....50¢  
Tool Cabinets.....50¢  
C. E. Jennings & Co.'s Machinists'  
Tool Chests.....33¢@10¢

**Chisels—**

Socket Framing and Firmer  
Standard List.....75¢10¢@75¢10¢5¢

Buck Bros.....30¢  
Charles Buck.....30¢  
C. E. Jennings & Co. Socket Fram-  
ing No. 15.....60¢  
Ohio Tool Co.'s.....70¢  
Swan's.....75¢  
L. & I. J. White.....30¢@45¢  
L. & I. J. White, Tanged.....25¢5¢

**Tanged—**

Tanged Firmers.....33 1/2¢@40¢  
Buck Bros.....30¢  
Charles Buck.....30¢  
C. E. Jennings & Co. Nos. 191, 181.....25¢  
Id.....10¢

**Cold—**

Cold Chisels, good quality.....13¢@15¢  
Cold Chisels, fair quality.....11¢@12¢  
Cold Chisels, ordinary.....9¢@10¢

**Chucks—**

Almond Drill Chucks.....35¢  
Almond Turret Six-Tool Chuck.....35¢  
Beach Pat., each \$8.00.....35¢5¢  
Empire.....25¢  
Blacksmiths.....25¢  
Jacobs' Drill Chucks.....35¢  
Pratt's Positive Drive.....25¢  
Skinner Patent Chucks.....25¢

Independent Lathe Chucks.....40¢10¢  
Universal, Reversible Jaws.....40¢  
Combination, Reversible Jaws.....40¢  
Drill Chucks, New Model.....25¢  
Drill Chucks, Standard.....40¢10¢  
Drill Chuck, Skinner Pat.....25¢  
Drill Chucks, Positive Drive.....33¢  
Planer Chucks.....30¢  
Face Plate Jaws.....40¢10¢  
Standard Tool Co.:  
Improved Drill Chuck.....45¢  
Union Mfg. Co.:  
Combination, Nos. 1, 2, 3, 4, 5, 6,  
7, 8 and 17.....40¢  
Combination, No. 21.....35¢  
Scroll Combination, Nos. 82 and  
84.....30¢  
Geared Scroll, Nos. 33, 34 and 35.....35¢  
Independent Iron, Nos. 18 and 318.....40¢  
Independent Steel, No. 64.....30¢  
Union Car Drill, Nos. 000, 101,  
103.....35¢  
Universal 11, 12, 16, 17, 13, 14, 15, 40  
Universal, No. 42.....35¢  
Iron Face Plate Jaws, Nos. 28, 30,  
48 and 50.....40¢  
Steel Face Plate Jaws, Nos. 70 and  
72.....35¢

Westcott Patent Chucks:  
Lathe Chucks.....50¢  
Little Giant Auxiliary Drill.....50¢  
Little Giant Double Grip Drill.....50¢  
Little Giant Drill, Improved.....50¢  
Oneida Drill.....50¢  
Scroll Combination Lathe.....50¢

**Clamps—**

Adjustable, Hammers.....20¢@20¢5¢  
Cable's Sargent's.....50¢10¢  
Carriage Makers', P. S. & W.  
Co.....40¢10¢@50¢  
Carriage Makers', Sargent's.....60¢  
Besly, Parallel.....33¢@10¢  
Lineman's, Utica Drop Forge & Tool  
Co.....40¢  
Wood Workers' Hammers.....40¢10¢  
Saw Clamps, see Vices, Saw Filers.

**Cleaners, Drain—**

Iwan's Champion, Adjustable.....55¢  
Iwan's Champion, Stationary.....47¢

**Sidewalk—**

Star Socket, All Steel.....\$4.05 net  
Star Shank, All Steel.....\$3.24 net  
W. & C. Shank, All Steel.....\$3.24 net  
7 1/2 in., \$3.00; 8 in., \$3.25.

**Cleavers, Butchers—**

Foster Bros.....30¢  
New Haven Edge Tool Co.'s.....45¢  
Fayette R. Plumb.....40¢  
L. J. White.....30¢

**Clippers, Horse and Sheep—**

Chicago Flexible Shaft Company:  
38 Chicago Horse, each.....\$3.75  
1902 Chicago Horse, each.....\$10.75  
20th Century Horse, each.....\$5.00  
Lightning Belt Horse, each.....\$15.00  
Chicago Belt Horse, each.....\$20.00  
Stewart's Enclosed Gear  
Horse, each.....\$6.75  
Stewart's Patent Sheep Shear-  
ing Machine, each.....\$12.75

**Clips, Axle—**

Regular Styles, list July 1, '05 80 pr.  
Cloth and Netting, Wire  
—See Wire, &c.

**Cocks, Brass—**

Hardware list:  
Compression, Plain Bbds,  
Globe, Kerosene, Racking,  
&c., Cocks.....75¢@75¢5¢

**Coffee Mills—**

See Mills, Coffee.

**Collars, Dog—**

Nickel Chain, Walter B. Stevens &  
Son's list.....40¢  
Leather, Walter B. Stevens & Son's  
list.....40¢

**Combs, Curry—**

Metal Stamping Co.....40¢

**Mane and Tail—**

Covert's Saddlery Works.....60¢10¢

**Compasses, Dividers, &c.—**

Ordinary Goods.....75¢5¢@75¢10¢  
Bemis & Call Hdw. & Tool Co.:  
Dividers.....65¢  
Calipers, Double.....65¢  
Calipers, Inside or Outside.....65¢  
Calipers, Wing.....60¢  
Compasses.....50¢  
Wm. Schellhorn Co.:  
Excelsior Dividers.....60¢  
Lodi Dividers.....75¢

**Conductor Pipe—**

L. C. L. to Dealers:  
Territory: Galvanized  
Steel. Iron. Copper.

Eastern: 70¢10¢ % 60¢7 1/2¢ % 50¢  
Central: 70¢2 1/2¢ % 60¢ % 40¢10¢45¢  
Western and S. W.: 65¢10¢ % 50¢10¢2 1/2¢ % 47 1/2¢

No. Western  
62 1/2¢@7 1/2¢ 50¢5¢ 40¢10¢  
Copper.  
Eastern.....50¢10¢  
Central.....50¢7 1/2¢  
Southern.....50¢5¢  
So. Western.....50¢2 1/2¢  
Terms, 60 days; 2% cash 10 days. Fac-  
tory shipments generally delivered.  
See also Eave Troughs.

**Coolers, Water—**

Gal., each.....2 3 4 6 8  
Labrador.....\$1.20 \$1.50 \$1.80 \$2.10 \$2.70  
Gal.....3 4 6 8  
Iceland, ea.....\$1.80 \$2.10 \$2.40 \$3.00  
Gal.....2 3 4 6 8  
Galvanized, ea.....\$1.85 \$2.00 \$2.25 \$2.90 \$3.90  
Galvanized, Lined, side handles,  
Gal.....2 3 4 6 8  
Each.....\$1.95 \$2.15 \$2.40 \$3.30 \$4.15  
White Enamelled.....25¢  
Agate Lined.....25¢

**Coopers' Tools—**

See Tools, Coopers.

**Coppers' Soldering—**

Soldering Coppers, 3 lbs. to pair  
and heavier, 23¢@24¢; lighter  
than 3 lbs. to pair.....25¢@26¢

**Cord— Sash—**

Braided, Drab.....lb. 35¢  
Braided, White, Com., Nos. 8  
to 12, 24¢; No. 7, 24 1/2¢; No. 6,  
25 1/2¢.

**Cable Laid Italian—**

lb. A, 18¢; B, 16¢  
Common India.....lb. 10¢10¢4¢  
Cotton Sash Cord, Twisted.....lb. 12¢  
Patent Russia.....lb. 11¢  
Cable Laid Russia.....lb. 11¢  
India Hemp, Braided.....lb. 11¢  
India Hemp, Twisted.....lb. 12¢  
Patent India, Twisted.....lb. 12¢  
Anniston Cordage Co.:  
Braided, Nos. 8 to 12, \$0.24; No. 7,  
\$0.24; No. 6, \$0.25; 5¢ doz., 50 ft.,  
Oriole, \$2.00; 50 ft., Columbia, \$0.85;  
50 ft., Vectors, \$1.00; 50 ft., 6-Thread,  
\$1.10; 50 ft., 3-Thread, \$0.95; 50 ft.,  
Manila, \$1.40; 60 ft., Jute, \$0.75.  
Pearl Braided, cotton, No. 6, 3¢ lb.  
25 1/2¢; No. 7, 25¢; Nos. 8 to 12, 24 1/2¢  
Eddystone Braided, Nos. 8, 9 and  
10, 25¢; 7, 25 1/2¢; 6, 26 1/2¢.

Harmony Cable Laid Italian, Nos. 7  
to 10.....lb. 23¢  
Peerless:  
Cable Laid Italian.....16¢  
Cable Laid Russian.....14¢  
Cable Laid India.....12¢  
Braided India.....18¢

Wire Sash Cord.....19¢  
Sash Cord Attachments, per doz.....10¢  
Samson, Nos. 8 to 12:  
Braided, Drab Cotton.....lb. 40¢  
Braided, Italian Hemp.....lb. 40¢  
Braided, Linen.....lb. 55¢  
Braided, White Cotton or Spool.....lb. 35¢

Massachusetts, White.....lb. 30¢  
Massachusetts, Drab.....lb. 35¢  
Phoenix, White, Nos. 8 to 12, 27¢;  
No. 7, 27 1/2¢; No. 6, 28 1/2¢.

Silver Laid:  
A, Drab.....45¢  
A, White.....40¢  
B, Drab.....40¢  
B, White.....35¢  
Italian Hemp.....40¢  
Linen.....57 1/2¢

See also Chain and Ribbon.

**Wire, Picture—**

List Oct., '00.....85¢10¢@85¢10¢45¢  
Hendryx Standard Wire Picture Cord,  
85¢10¢

**Cradles—**

Grain.....40¢12 1/2¢

**Crayons—**

White Round Crayons, gr. 6¢@6 1/2¢  
Cases, 100 gro., \$5.00 at factory.

D. M. Stewart Mfg. Co.:  
Genuine.....Per gro.  
Round Pencil, \$2.25; Square Pen-  
cil, \$1.75; Flat Crayon, \$2.50;  
Metal Workers' Crayon, \$3.00;  
Rolling Mill Crayon, \$3.00.

See also Chain and Ribbon.

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See also Chain and Ribbon.

**Wire, Picture—**

List Oct., '00.....85¢10¢@85¢10¢45¢  
Hendryx Standard Wire Picture Cord,  
85¢10¢

Little Giant.....40¢10¢50¢  
Nos.....305 310 312 320 322  
\$35.00 \$48.00 \$14.00 \$72.00 \$68.00  
N. E. Food Choppers.....25¢  
New Triumph No. 605, 3¢ doz.....40¢50¢  
Russwin Food, No. 1, \$24.00; No. 2,  
\$27.00.....45¢10¢10¢  
Woodruff's.....1¢ doz. 40¢50¢  
Nos.....100 150  
\$15.00 \$18.00  
Enterprise Beef Shavers.....25¢@30¢

**Slaw and Kraut—**

Henry Disston & Sons:  
Slaw, Corn Grater, &c.....40¢  
Kraut Cutters, 24 x 7, 26 x 8, 30  
x 9.....55¢  
Kraut Cutters, 36 x 12, 40 x 12.....40¢  
J. M. Mast Mfg. Co.:  
Slaw Cutters, 1 Knife.....3¢ doz. \$3.00  
Combined Slaw Cutter and Corn  
Grater.....1¢ doz. \$4.00  
Tucker & Dorsey Mfg. Co.:  
Kraut Cutters.....40¢  
Slaw Cutters, 1 Knife.....1¢ doz. \$12.00  
Slaw Cutters, 2 Knife.....1¢ gr. \$22¢@33¢

**Tobacco—**

All Iron, Cheap.....doz. \$4.25@4.50  
Enterprise.....25¢@30¢  
National, 1¢ doz., No. 1, 2¢; No. 2,  
18¢.....\$1.00  
Sargent's, 1¢ doz., No. 2.....60¢  
Sargent's, Nos. 12 and 21.....60¢10¢

**Washer—**

Appleton's, 3¢ doz., \$16.00.....50¢10¢10¢

**Diggers, Post Hole, &c.—**

Dalbey Post Hole Auger, per doz., \$9.00  
Iwan's Improved Post Hole Auger.....40¢5¢  
Iwan's Vaughan Pattern Post Hole  
Augers.....1¢ doz. \$6.25  
Iwan's Perfection Post Hole Digger.....  
1¢ doz. \$8.25  
Iwan's Split Handle Post Hole Dig-  
gers.....1¢ doz. \$7.25  
Kohler's Universal.....1¢ doz. \$12.00  
Kohler's Little Giant.....1¢ doz. \$12.00  
Kohler's Hercules.....1¢ doz. \$10.00  
Kohler's Invincible.....1¢ doz. \$9.00  
Kohler's Rival.....1¢ doz. \$8.00  
Kohler's Pioneer.....1¢ doz. \$7.00  
Never-Break Post Hole Diggers, 3¢  
doz., \$24.00.....60¢  
Samson, 3¢ doz. \$34.00.....25¢

**Dividers—See Compasses.**

**Drawers, Money—**

Tucker's Pat. Alarm Till No. 1, 3¢  
doz., \$18; No. 2, \$15; No. 3, \$12;  
No. 4, \$18.

**Drawing Knives—**

See Knives, Drawing.

**Dressers, Emery Wheel—**

Diamond Emery Wheel Dressers.....35¢  
Diamond Wheel Dresser Cutters.....35¢

**Drills and Drill Stocks—**

Common Blacksmiths' Drill,  
each.....\$1.50@1.75  
Breast, Millers Falls.....15¢10¢  
Breast, P. S. & W.....40¢  
Goodell Automatic Drills.....40¢@40¢10¢  
Johnson's Automatic Drills, Nos. 2  
and 3.....16¢  
Johnson's Drill Points.....16¢  
Millers Falls Automatic Drills.....33¢@10¢  
Ratchet, Curtis & Curtis.....25¢  
Ratchet, Parker's.....40¢  
Ratchet, Weston's.....40¢  
Ratchet, Weston's, Style H Im-  
proved.....40¢  
Ratchet, No. 012.....40¢  
Ratchet, Whitney's, P. S. & W.....50¢  
Whitney's Hand Drill, No. 1, \$10.00;  
Adjustable, No. 10, \$12.00.....33 1/2¢

**Twist Drills—**

Bit Stock.....60¢10¢10¢@70¢  
Taper and Straight Shank.....  
60¢10¢@60¢10¢5¢

**Drivers, Screw—**

Screw Driver Bits, per doz. 45¢@50¢  
Balsey's Screw Holder and Driver, 3¢  
doz., 2 1/2-in., 5¢; 4-in., 7¢5

No. 24.....  
No. 22.....  
Copper.....

**Elbows, Stove Pipe—**

Dover, one piece.....  
Perfect Elbows (R. M. Co.).....

**Emery, Turkish—**

4 to 46 5/4 to 220 Flour.

Kegs.....  
Kegs.....  
Kegs.....

10-lb. cans.....  
10 in case.....  
10-lb. cans, less.....

than 10.....  
Less quantity.....  
NOTE.—In lots 1 to 3 tons a discount of 10% is given.

**Extractors, Lemon Juice—**

See Squeezers, Lemon.

**Fasteners, Blind—**

Zimmerman's.....  
Walting's.....

**Cord and Weight—**

Ives.....

**Faucets—**

Cork Lined.....  
Metallic Key, Leather Lined.....

Red Cedar.....  
Petroleum.....  
B. & L. B. Co.:.....

Metal Key.....  
Star.....  
West Lock.....

John Sommer's Peerless Tin Key.....  
John Sommer's Boss Tin Key.....  
John Sommer's Victor Mtl. Key.....

John Sommer's Duplex Mtl. Key.....  
John Sommer's Diamond Lock.....  
John Sommer's I. X. L. Cork Lined.....

John Sommer's Reliable Cork Lined.....  
John Sommer's Chicago Cork Lined.....  
John Sommer's O. K. Cork Lined.....

John Sommer's No Brand, Cedar.....  
John Sommer's Perfection, Cedar.....  
McKenna, Brass.....

Burglar Proof, N. P.....  
Improved, 3/4 and 1/2 inch.....  
Self Measuring.....

Enterprise, 1/2 doz. \$36.00.....  
Lane's, 1/2 doz. \$36.00.....  
National Measuring, 1/2 doz. \$36.00.....

**Felloe Plates—**

See Plates, Felloe.

**Fires—Domestic—**

List revised Nov. 1, 1899.

Best Brands.....  
Standard Brands.....  
Lower Grade.....

**Imported—**

Stubs' Tapers, Stubs' List, July 24, '97.....

**Fixtures, Fire Door—**

Richards Mfg. Co.:.....  
Universal, No. 105.....  
Special, No. 101.....

Fusible Links, No. 96.....  
Expansion Bolts, No. 107.....  
Grindstone.....

Net Prices:.....  
Inch.....  
Per doz.....  
P. S. & W. Co.....

Reading Hardware Co.....  
Sargent's Giant Grindstone.....  
Stowell's Grindstone Fixtures, Extra Heavy.....

Stowell's Grindstone Fixtures, Light.....  
Fodder Squeezers.....  
See Compressors.

**Forks—**

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Iowa Dig-Ezy Potato.....  
Victor, Hay.....  
Victor, Manure.....

Victor, Header.....  
Champion, Hay.....  
Champion, Header.....

Columbia, Hay.....  
Columbia, Header.....  
Columbia, Spading.....

Hawkeye Wood Barley.....  
W. & C. Potato Digger.....  
Acme Hay.....

Acme Hay.....  
Acme Manure, 4 line.....  
Dakota Header.....

Jackson Steel Barley.....  
Kansas Header.....  
W. & C. Favorite Wood Barley.....

Plated.—See Spoons.

**Frames—Saw—**

White, S'pt Bar, per doz. \$75.00.....  
Red, S'pt Bar, per doz. \$1.00.....  
Red, Dbl. Brace, per doz. \$1.40.....

**Freezers, Ice Cream—**

Qt. ....  
Each.....

**Fruit and Jelly Presses—**

See Presses, Fruit and Jelly.

**Fry Pans—See Pans, Fry.****Fuse—**

Per 1000 Feet.....

Hemp.....  
Cotton.....  
Waterproof Spt. Taped.....

Waterproof Dbl. Taped.....  
Waterproof Tpl. Taped.....

**Gates, Molasses and Oil—**

Stebbins' Pattern.....

**Gauges—**

Marking, Mortise, &c. ....  
Chapin-Stephens Co.:.....  
Marking, Mortise, &c. ....  
Scholl's Patent.....  
Door Hangers.....

Stanley R. & L. Co.'s Butt and Rabbit Gauge.....  
Marking and Mortise.....  
Wire, Brown & Sharpe's.....  
Wire, Morse's.....  
Wire, P. S. & W. Co.....

**Gimlets—Single Cut—**

Numbered assortments, per gro.

Nail, Metal, No. 1, \$2.00; No. 2, \$2.30.....  
Spike, Metal, No. 1, \$4.00; No. 2, \$4.30.....  
Nail, Wood Handled, No. 1, \$2.30; No. 2, \$2.60.....

Spike, Wood Handled, No. 1, \$4.30; No. 2, \$4.60.....

**Glass, American Window**

See Trade Report.

**Glasses, Levell—**

Chapin-Stephens Co.....

**Glue, Liquid Fish—**

Bottles or Cans, with Brush.....

International Glue Co. (Martin's).....

**Grease, Axle—**

Common Grade.....  
Dixon's Everlasting, 10-lb pails, ea. 85¢  
Dixon's Everlasting, in boxes, 1/2 doz. 1 lb. \$1.20; 1 lb. \$2.00.....

**Griddles, Soapstone—**

Pike Mfg. Co.....

**Grindstones—**

Bicycle Emery Grinder.....  
Bicycle Grindstones, each.....  
Pike Mfg. Co.:.....

Improved Family Grindstones, per inch, 1/2 doz. \$2.00; 1 doz. \$3.00.....  
Pike Mower and Tool Grinder, each.....

**Grips, Nipple—**

Perfect Nipple Grips.....

**Halters and Ties—**

Cow Ties.....  
Covert Mfg. Co.:.....

Web.....  
Jute Rope.....  
Sisal Rope.....

Cotton Rope.....  
Hemp Rope.....  
Covert's Saddlery Works:

Web and Leather Halters.....  
Jute and Manila Rope Halters.....  
Sisal Rope Halters.....

Jute, Manila and Cotton Rope Ties.....  
Sisal Rope Ties.....  
Oneida Community:

Am. Coil and Halters.....  
Am. Cow Ties.....  
Niagara Coil and Halters.....

Niagara Cow Ties.....  
E. T. Rugg & Co.:.....  
Leather Halters.....

Web Halters and Webbing.....  
Jute and Sisal Rope Halters.....  
Jute and Sisal Horse and Cattle.....

Cotton Horse Ties.....  
Livestock Ties, Braided.....

**Hammers—**

Handled Hammers—

Heller's Machinists'.....  
Heller's Farriers'.....  
Magnetic Tack, Nos. 1, 2, 3, \$1.25, \$1.50, \$1.75.....

Peck, Stow & Wilcox, Steel.....  
Fayette R. Plumb.....  
Plumb, A. E. Nail.....

Engineers' and B. S. Hand.....  
Machinists' Hammers.....  
Kiverting and Tinnings.....

Sargent's C. S. New List.....

**Heavy Hammers and Sledges—**

Under 3 lb., per lb., 50¢.....  
3 to 5 lb., per lb., 60¢.....  
Over 5 lb., per lb., 80¢.....  
Wilkinson's Smith's.....

**Handles—**

Agricultural Tool Handles

Axe, Pick, &c.....  
Hoe, Rake, &c.....  
Fork, Shovel, Spade, &c.....

Long Handles.....  
D Handles.....  
Cross-Cut Saw Handles—

Atkins.....  
Champion.....  
Disston's.....

**Mechanics' Tool Handles—**

Auger, assorted.....  
Brad Axle.....  
Chisel Handles:

Apple Tanged Firmer, gro. assorted.....  
Hickory Tanged Firmer, gro. assorted.....  
Apple Socket Firmer, gro. assorted.....

Hickory Socket Firmer, gro. assorted.....  
Hickory Socket Framing, gro. assorted.....  
File, assorted.....  
Hammer, Hatchet, &c.....

Hand Saw, Varnished, doz. 80¢.....  
Hand Saw, Not Varnished, doz. 85¢.....  
Plane Handles:

Jack, doz. 30¢; Jack, Bolted, 75¢  
Fore, doz. 45¢; Fore, Bolted, 90¢  
Chapin-Stephens Co.:.....  
Carving Tool.....  
Chisel.....  
File and Awl.....  
Saw and Plane.....  
Screw Driver.....  
Millers Falls Adj. and Ratchet Auger Handles.....  
Nicholson Simplicity File Handle.....

**Hangers—**

NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.

Allith Mfg. Co.:.....  
Reliable, No. 1.....  
Reliable, No. 2.....  
Chicago Spring Butt Co.:.....

Oscillating.....  
Big Twin.....  
Chisholm & Moore Mfg. Co.:.....  
Baggage Car Door.....  
Elevator.....  
Railroad.....  
Cronk & Carrier Mfg. Co.:.....

Loose Axle.....  
Roller Bearing.....  
Griffin Mfg. Co.:.....  
Solid Axle, No. 10, \$12.00.....  
Roller Bearing, No. 11, \$15.00.....  
Roller Bearing, Ex. Hy., No. 11, \$18.00.....  
Hinged Hangers, \$18.00.....  
Lane Bros. Co.:.....

Parlor, Ball Bearing.....  
Parlor, Standard.....  
Parlor, No. 105.....  
Parlor, New Model.....  
Parlor, New Champion.....  
Barn Door, Standard.....  
Hinged.....  
Covered.....  
Special.....  
Lawrence Bros.:.....  
Advance.....  
Cleveland.....  
Clipper, No. 75.....  
Crown.....  
Easy Parlor Door, Dbl. Sets, \$2.50; Single Sets, \$1.25.....  
Giant.....  
Hummer.....  
New York.....  
Peerless.....  
Sterling.....  
McKinney Mfg. Co.:.....  
No. 1, Special.....  
No. 2, Standard, \$18.....  
Hinged Hangers, \$18.....  
Meyers' Stayon Hangers.....  
Richards Mfg. Co.:.....  
Hangers, Nos. 47, 48, 147, 247, 347.....  
Pioneer Wood Track No. 3, \$2.00.....  
Ball B'g St'l Track No. 10, \$5.00.....  
Roller B'g St'l Track No. 12, \$2.15.....  
Roller B'g St'l Track No. 13, \$2.30.....  
Roller B'g, Nos. 39, 41, 43.....  
Hero, Adj. Track No. 19, \$5.00.....  
Adjustable Track Tandem Trolley Track No. 16.....  
Seal, Steel Track No. 8.....  
Auto Adj. Track No. 22.....  
Trolley B. D. No. 17.....  
Trolley F. D. No. 12.....  
Trolley F. D. No. 12.....  
Trolley F. D. No. 13.....  
Safety Underwriters F. D. No. 101.....  
Tandem No. 44, 2 1/2 and 3 1/2.....  
Palace, Adjustable Track No. 132.....  
Royal, Adjustable Track No. 133.....  
Ives' Wood Track No. 1.....  
Trolley B. D. No. 20.....  
Trolley B. D. No. 21.....  
Trolley B. D. No. 27.....  
Trolley B. D. No. 28.....  
Roller Bearings, Nos. 37, 38, 39.....  
Anti-friction, No. 42.....  
Anti-friction, No. 44, Sizes 2 1/2 and 3.....  
Hinged Tandem No. 48.....  
Folding Door B. B. Swivel No. 135.....  
Safety Door Hanger Co.:.....  
Storm King Safety.....  
U. S. Standard Hinges.....  
Stowell Mfg. & Foundry Co.:.....  
Acme Parlor Ball Bearing.....  
Ajax Hinge Door.....  
Atlas.....  
Baggage Car Door.....  
Climax Anti-Friction.....  
Elevator.....  
Express Car Door.....  
Freight.....  
Interstate.....  
Lundy Parlor Door.....  
Magic.....  
Matchless.....  
Nansen.....  
Parlor Door.....  
Railroad.....  
Rex Hinge Door.....  
Street Car Door.....  
Steel, Nos. 300, 401, 500.....  
Underwriters' Fire Door.....  
West Warehouse Door.....  
Zenith for Wood Track.....  
A. L. Sweet Iron Works:

Check Back.....  
Climax Anti-Friction.....  
Eagle.....  
Hylo Hinge.....  
New Perfection.....  
Pilot.....  
Pilot Hinge.....  
Rider Woofter.....  
Western Pattern.....  
Taylor & Boggs Fy Co's Kidder's Roller Bearing.....

**Hangers—Garment—**

Pullman Trouser, 1 pair Flat Aluminoy, \$9.00; 1 pair Round Nickle-

ed, \$9.00; 4 pair Round Nickle-

\$27.00; 1 pair Flat Gun Metal, \$12.00; 1 pair Flat Black Enameled, \$7.50; 1 pair Wood Clamp, \$13.00; Skirt Hangers, Folding, per gro., \$21.00; Coat Hangers, Folding, per gro., \$2.00; Garment Hanger Rods, Round Nickle-

d, per gro., \$15.00; Garment Hanger Loops, Round Nickle-

d, per gro., \$15.00; Victor Folding.....  
Western, W. G. Co.....

**Gate—**

Myers' Patent Gate Hangers, 1/2 doz. net.....  
Jolst and Timber—

Lane Bros. Co.....

**Hasps—**

Griffin's Security Hasp.....  
McKinney's Perfect Hasp, 1/2 doz.....

**Hatchets—**

Regular list, first quality.....  
Second quality \$1.00 per doz. less than first quality.

**Heaters, Carriage—**

Clark, No. 5, \$1.75; No. 5B, \$2.00; No. 3, \$2.25; No. 3D, \$2.75; No. 7D, \$3.00; No. 3E, \$3.25; No. 1, \$3.50.....  
Clark Coal, 1/2 doz. \$0.75.....

**Hinges—****Blind and Shutter Hinges—**

Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No. ....  
Doz. pair.....  
Mortise Shutter: (L. & P. O. S., Dixie, &c.)

No. ....  
Doz. pair.....  
Mortise Reversible Shutter (Buffalo, &c.):

No. ....  
Doz. pair.....  
North's Automatic Blind Fixtures, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50.....  
Charles Parker Co.....  
Parker Wire Goods Co.:.....  
Hale & Benjamin Automatic Blind Hinges.....  
Hale's Blind Awning Hinges, No. 110, for wood, \$9.00; No. 111, for brick, \$9.00.....  
Reading's Gravity.....  
Sargent's, Nos. 1, 3, 11 and 13.....  
Stanley's Steel Gravity Blind Hinges, 1/2 doz. sets, without screws, \$9.90; with screws.....  
Wrightsville Hardware Co.:.....  
O. S., Lull & Porter.....  
Acme, Lull & Porter.....  
Queen City Reversible.....  
Shepard's Noiseless, Nos. 60, 65, 66.....  
Niagara, Gravity Locking, Nos. 1, 3 & 5.....  
1868, Old Pat'n, Nos. 1, 3 & 5.....  
Tip Pat'n, Nos. 1, 3 & 5.....  
Buffalo, Gravity Locking, Nos. 1, 3 & 5.....  
Shepard's Double Locking, Nos. 20 & 25.....  
Champion Gravity Locking, No. 75.....  
Steamboat Gravity Locking, No. 10, 15.....  
Pioneer, Nos. 101 & 103.....  
Empire, Nos. 101 & 103.....  
W. H. Co.'s Mortise Gravity Locking, No. 2.....

**Gate Hinges—**

Clark's or Shepard's—Doz. sets:

No. ....  
Hinges with Latches.....  
Hinges only.....  
Latches only.....

**New England:**

With Latch.....  
Without Latch.....  
Reversible Self-Closing:

With Latch.....  
Without Latch.....  
Western:

With Latch.....  
Without Latch.....  
Wrightsville Hardware Co.:.....  
Shepard's or Clark's, doz. sets:

No. ....  
Hinges with Latches.....  
Hinges only.....  
Latches only.....

**Pivot Hinges—**

Bommer Bros. Pivot.....  
Lawson Mfg. Co. Matchless.....

**Spring Hinges—**

Holdback, Cast Iron.....  
Non-Holdback, Cast Iron.....  
J. Bardaley:

Bardaley's Non-Checking Mortise Floor Hinges.....  
Bardaley's Patent Checking.....  
Bommer Bros.:.....  
Bommer Ball Bearing Floor Hinges.....  
Bommer Ball Bearing Floor Hinges.....  
No. 999 Wrot. Steel Hold Back.....  
Chicago Spring Butt Co.:.....  
Chicago Spring Hinges.....  
Triple End Spring Hinges.....  
Chicago (Ball Bearing) Floor Hinge.....  
Garden City Engine House.....  
Keene's Saloon Door.....  
Columbian Hardware Co.:.....  
Acme, Wrought Steel.....  
Acme, Brass.....  
American.....  
Columbia, No. 14.....  
Columbia, No. 18.....  
Columbia, Adjustable, No. 7.....  
Gem, new list.....  
Clover Leaf.....  
Oxford, new list.....  
Lawson Mfg. Co. Matchless.....  
Richards Mfg. Co.:.....  
Superior Double Acting Floor Hinges.....  
Shelby Spring Hinge Co.:.....  
Buckeye All Steel Holdback Screen Door.....  
Ball Bearing Floor Hinge.....  
Ohio Detachable Screen Door Hinge.....  
Superior Spring Hinge Co.:.....  
Superior Floor Hinges.....  
The Stover Mfg. Co.:.....  
Ideal, No. 16, Detachable.....  
Ideal, No. 4.....  
New Idea, No. 1.....  
New Idea, Double Acting.....  
New Idea Floor.....  
Van Wagner:

Ball Bearing.....  
No. 77 Sh't Steel Holdback.....

Extra 10% often given on most of these Hinges.



**Wrought Iron Hinges—**  
Strap and T Hinges, &c., list  
December 20, 1904:

Light Strap Hinges.....	.65	
Heavy Strap Hinges.....	.75	
Light T Hinges.....	.60	
Heavy T Hinges.....	.70	
Extra Heavy T Hinges.....	.70	
Hinge Hubs.....	.45	
Cor. Heavy Strap.....	.75	
Cor. Ex. Heavy T.....	.70	

Screw Hook	1 1/2 to 2 in.	.16	.34
and Strap.	2 to 3 in.	.16	.34
Screw Hook and Eye:			
3/4 to 1 inch.....		.16	.64
1 to 1 1/2 inch.....		.16	.74
1 1/2 inch.....		.16	.84

**Hitchers, Stall—**

Covert Mfg. Co., Stall Hitchers.....30&2%

**Hods— Coal—**

Inch.....	15	16	17	18
Galv. Open.....	\$2.50	2.75	3.00	3.25
Jap. Open.....	\$1.90	2.10	2.25	2.55
Galv. Funnel.....	\$3.00	3.30	3.60	3.90
Jap. Funnel.....	\$2.45	2.65	2.85	3.30

**Masons' Etc.—**

Cleveland Wire Spring Co.:  
Steel Brick, No. 162.....each \$0.95  
Steel Mortar, No. 158.....each \$1.25

**Hoes— Eye—**

Scovill and Oval Pattern.....  
60&100&60&10&10

Grub, list Feb. 23, 1899.....  
70&100&75&10

D. & H. Scovill.....33&10

**Handled—**

NOTE.—Manufacturers are selling  
from the list of September 1, 1904, but  
many jobbers are still using list of Au-  
gust 1, 1899, or selling at net prices.  
Cronk's Weeding No. 1, \$2.00; No. 2, \$2.25  
Ft. Madison Cotton Hoe.....70&10&10  
Ft. Madison Crescent Cultivator.....  
Ft. Madison Mattock Hoe.....70&10  
Ft. Madison Mattock Hoe.....70&10  
Regular Weight.....doz. 60%  
Junior Size.....doz. \$4.00  
Ft. Madison Sprouting Hoe.....doz. 50%  
Ft. Madison Dixie Tobacco Hoe.....  
Kretzinger's Cut Easy.....70&10  
Warren Hoe.....45&10  
W. & C. Ivanhoe.....75&10  
B. B. 6 in., Cultivator Hoe.....\$3.15  
B. B. 6 in.....\$3.35  
Acme Weeding.....doz. \$4.35  
W. & C. Luning Shovel Hoe.....doz. \$1.85

**Hoisting Apparatus—**

See Machines, Hoisting.

**Holders— Bit—**

Angular, 3/4 doz. \$24.00.....45&10%

**Door—**

Bardsley's.....45%  
Empire.....50%  
Pullman.....60%  
Superior.....35%

**File and Tool—**

Nicholson File Holders and File  
Handles.....33&10

**Fruit Jar—**

Triumph Fruit Jar Holder, 3 gross,  
\$10.80; 3 doz.....\$1.25

**Hones—Razor—**

Pike Mfg. Co., Belgian, German and  
Swat.....50%

**Hooks—Cast Iron—**

Bird Cage, Reading.....40%  
Bird Cage, Sargent's List, Nos. 29, 32,  
33, 129, 132, 133 and 135.....50&10&10  
Clothes Line, Reading List.....40%  
Clothes Line, Sargent's List.....50&10  
Coat and Hat, Sargent's List.....50&10  
Clothes Line, Stowell's.....45&10  
Coat and Hat, Reading.....45&10  
Coat and Hat, Stowell's.....70%  
Coat and Hat, Wrightsville.....65%  
Harness, Reading List.....40%  
Harness, Stowell's.....60%  
School House, Stowell's.....70%

**Wire—**

Belt.....80&100%  
Wire C. & H. Hoes.....75&100&75&10&10  
Columbian Hdw Co., Gem.....70&10  
Parker Wire Goods Co., King.....70&10  
van Wagener, Coat and Hat.....70%  
Western W. G. Co. Molding.....75%  
Wire Goods Co.:  
Acme.....60&10  
Chief.....70%  
Crown.....75%  
Czar.....65%  
V Brace.....75%  
Czar Harness.....50&10

**Wrought Iron—**

Box, 6 in., per doz. \$1.00; 8 in.,  
\$1.25; 10 in., \$2.50.  
Cotton.....doz. \$1.05&\$1.25  
Wrought Staples, Hooks, &c.—  
See Wrought Goods

**Miscellaneous—**

Hooks, Bench, See Staps, Bench.  
Bush, Light, doz. \$1.75; Medium,  
\$5.35; Heavy, \$8.25  
Grass, best, all sizes, per doz. \$1.80  
Grass, common grades, all sizes,  
per doz.....\$1.30  
Whiffletree.....lb. 5%&6%  
Hooks and Eyes:  
Brass.....60&50&60&10&5%  
Malleable Iron.....70&70&10%  
Covert Mfg. Co. Gate and Scuttle  
Hooks.....40%  
Covert Saddlery Works' Self Locking  
Gate and Door Hook.....60%  
Ft. Madison Cut-Easy Corn Hooks,  
3 doz. \$3.25 net

**Bench Hooks—See Bench Stops.**

**Cor. Hooks—See Knives, Cor.**

**Horse Nails—**

See Nails, Horse.

**Horsehoes—**

See Shoes, Horses.

**Hose, Rubber—**

Garden Hose, 3/4-inch:  
Competition.....ft. 5 @ 6¢  
3-ply Guaranteed.....ft. 8 @ 9¢  
4-ply Guaranteed.....ft. 10 @ 11¢  
Cotton Garden, 3/4-in., coupled:  
Low Grade.....ft. 8 @ 9¢  
Fair Quality.....ft. 10 @ 11¢

**Irons— Sad—**

From 4 to 10.....lb. 3 @ 3 1/2¢  
B. B. Sad Irons.....lb. 3 1/4 @ 3 1/2¢  
Mrs. Potts', cents per set:  
Nos. ....50 55 60 65  
Jap'd Tops.....63 65 78 75  
Tin'd Tops.....71 68 81 78  
New England Pressing, lb. 3 1/4 @ 1 1/2¢

**Pinking—**

Pinking Irons.....doz. 60¢

**Irons, Soldering**

See Copiers.

**Jacks, Wagon—**

Covert Mfg. Co.:  
Auto Screw.....30&2%  
Steel.....45%  
Covert's Saddlery Works:  
Daisy.....60&10%  
Victor.....50%  
Lockport.....50%  
Lane's Steel.....30&10&2%  
Richards' Tiger Steel, No. 130.....50&10%  
Smith & Hemenway Co.'s.....25%

**Kettles—**

Brass, Spun, Plain.....20&25%  
Enameled and Cast Iron—See Ware,  
Hollow.

**Knives—**

Butcher, Kitchen, &c.—  
Foster Bros. Butcher, &c.....30%  
Wilkinson Shear & Cutlery Co.....60%

**Corn—**

Wilkinson Wilcut Brand Knives and  
Hooks.....60%  
Watlington Acme, 3/4 doz. \$2.65  
Dent, \$2.15; Adj. Serrated, \$2.20;  
Serrated, \$2.10; Yankee No. 1, \$1.50;  
Yankee No. 2, \$1.15.

**Drawing—**

Standard.....75&100%  
C. E. Jennings & Co., Nos. 43, 46, 60,  
Jennings & Griffin, Nos. 41, 42.....60%  
Ohio Tool Co.'s.....70%  
Swan's.....75%  
Watrous.....65%  
L. & J. J. White.....20&35%  
Hay and Straw—  
Serrated Edge, per doz. \$5.75&6.00  
Ivan's Sickle Edge.....doz. \$9.50  
Ivan's Serrated.....doz. \$10.00

**Mincing—**

Buffalo.....3/4 doz. \$13.00

**Miscellaneous—**

Farmers'.....doz. \$3.00&3.25  
Westonholm's.....3/4 doz. \$3.00&3.25

**Knobs—**

Base, 2 1/2-inch, Birch, or Maple,  
Rubber Tap.....gro. \$1.25&\$1.50  
Carriage, Jap., all sizes.....

Door, Mineral.....gro. 40&45¢  
Door, Por. Jap'd.....doz. 65&70¢  
Door, Por. Nickel.....doz. 70&75¢  
Bardsley's Wood Door, Shutters, &c. 15%  
Picture, Sargent's.....60&10&10%

**Lacing, Leather—**

See Belting, Leather—

**Ladders, Store, &c.—**

Lane's Store.....25%  
Myers' Noiseless Store Ladders.....50%  
Richards Mfg. Co.:  
Improved Noiseless, No. 112.....50%  
Climax Shelf, No. 113.....50%  
Trolley, No. 109.....50%

**Ladies, Melting—**

L. & G. Mfg. Co. (low list).....25%  
P. S. & W.....50%  
Reading.....60%  
Sargent's.....50&10%

**Lanterns—Tubular—**

Regular Tubular, No. 0.....  
doz. \$4.25&4.50  
Lift Tubular, No. 0.....  
doz. \$4.75&5.00  
Hinge Tubular, No. 0.....  
doz. \$4.75&5.00  
Other Styles.....40&45%

**Bull's Eye Police—**

No. 1, 2 1/2-inch.....\$2.75&\$3.00  
No. 2, 3-inch.....\$3.00&\$3.25

**Lasts and Stands, Shoe—**

Stowell's Atlas, Malleable Iron.....50%  
Stowell's Badger, Cast Iron.....50%

**Latches—Thumb—**

Roggin's Latches, with screw.....  
doz. 35&40¢

**Door—**

Cronk & Carrier Mfg. Co., No. 101,  
Cronk & Carrier Mfg. Co., Latch,  
Haap and Staples.....50%  
Richards' Bull Dog, Heavy, No.  
125.....50&5%  
Richards' Trump, No. 127.....\$1.50

**Leaders, Cattle—**

Small.....doz. 50¢; large, 60¢  
Covert Mfg. Co.:  
Cotton, Hemp and Jute, 45%;  
Sisal, 33 1/2%.

**Lifters, Transom—**

R. & E.....33 1/2%

**Lines—**

Wire Clothes, Nos. 18 19 20  
100 feet.....\$2.25 2.00 1.75  
75 feet.....\$1.75 1.35 1.10  
Anniston Waterproof Clothes, 50 ft.,  
3/4 gro. \$23.00; Gilt Edge, \$23.00; Air  
Line, \$23.00; Acme, \$18.00; Alabama,  
\$17.00; Empire, \$16.00; Advance,  
\$14.00; Eclipse, \$13.50; Chicago,  
\$11.50; Standard, \$10.50; Columbia,  
\$9.50; Allston, \$13.50; Calhoun, \$12.00.  
Samson Cordage Works:  
Solid Braided Chalk, Nos. 0 to 3, 40%

**Silver Lake Braided Chalk, No. 0,**  
\$8.00; No. 1, \$6.50; No. 2, \$7.00; No.  
3, \$7.50.....20%

Masons' Lines, Shade Cord, &c.:  
White Cotton, No. 3 1/2, \$1.50; No. 4,  
\$2.00; No. 4 1/2, \$2.50; Colors, No. 3 1/2,  
\$1.15; No. 4, \$2.25; No. 4 1/2, \$2.75;  
Linen, No. 3 1/2, \$2.50; No. 4, \$3.50;  
No. 4 1/2, \$4.50.....20%  
Tent and Awning Lines: No. 5,  
White Cotton, \$7.50; Drab Cotton,  
\$8.50.....20%  
Clothes Lines, White Cotton: 50 ft.,  
\$2.75; 60 ft., \$3.25; 70 ft., \$3.75;  
75 ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75;  
100 ft., \$5.25.....20%

**Locks— Cabinet—**

Cabinet Locks.....33 1/2 @ 33 1/2 @ 7 1/2¢

**Door Locks, Latches, &c.—**

NOTE.—Net Prices are very often made  
on these goods.

Reading Hardware Co.....40%  
R. & E. Mfg. Co.....40%  
Sargent & Co.....10&10%  
Stowell's Steel Door Latches.....30%

**Elevator—**

Stowell's.....30%

**Padlocks—**

Wrought Iron.....75&100&50&80&60%  
Net prices are general.

R. & E. Mfg. Co. Wrought Steel and  
Brass.....75&10%

**Sash, &c.—**

Ives' Patent:  
Bronze and Brass.....62 1/2%  
Crescent.....50&10%  
Iron.....62 1/2%  
Window Ventilating.....60%  
Robison Patent Ventilating Sash  
Lock.....40%  
Wrought Bronze and Brass.....55%  
Wrought Steel.....55%  
Pullman Patent Ventilating Lock.....25%  
Reading.....40%

**Machines—Boring—**

Com. Up'r, without Augers, \$2.00  
Com. Ang'r, without Augers, \$2.25  
Swan's Improved.....40&10%  
Angular.

Jennings', Nos. 1 and 4.....35&3%  
Millers' Falls.....5.75  
Snel's, Rice's Pat. 2.50.....2.75

**Corking—**

Reisinger Invinible Hand Power.....  
3/4 doz. \$48.00

**Fence—**

Williams' Fence Machines.....each, \$5.50

**Hoisting—**

Moore's Anti-Friction Differential  
Pulley Block.....30%  
Moore's Hand Hoist, with Lock  
Brake.....20%

**Ice Cutting—**

Chandler's.....12 1/2%

**Washing—**

Boss Washing Machine Co.: Per doz.  
Boss No. 1.....\$57.00  
Boss Rotary.....\$54.00  
Champion Rotary Hammer No. 1.....\$54.00  
Standard Champion No. 1.....\$48.00  
Standard Perfection.....\$36.00  
Cint' Squeeze Western.....\$30.00  
Uneda American, Round.....\$30.00

**Mallets—**

Hickory.....45&50%  
Lignumvite.....45&50%  
Timbers' Hickory and Apple-  
wood.....doz. 45&50%

**Mangers, Stable—**

Swett Iron Works.....50%

**Mashers, Vegetable—**

Western W. G. Co., Potato.....60&10%

**Mats, Door—**

Elastic Steel (W. G. Co.), new list.....  
50&10%

**Keystone Wire Matting Co.: 50&10%**

**Mattocks—**

See Picks and Mattocks.

**Milk Cans—See Cans, Milk.**

**Mills, Coffee, &c.—**

Enterprise Mfg. Co.....25&30%  
National List, J. B. I., 1902.....30%  
Parker's Columbia & Victoria 30&100&60  
Parker's Box and Side.....50&100&60  
Swift, Lane Bros. Co.....30%

**Mowers, Lawn—**

NOTE.—Net prices are generally quoted  
cheapest.....all sizes, \$1.85&12.50  
Cheap.....all sizes, \$2.00&12.50  
Better Grade.....all sizes, \$2.50&4.50

12 1 1/2 16 18 in.

High Grade.....\$4.50 4.75 5.00 5.25

Continental.....60&5%  
Great American.....70%  
Great American Ball B'r'g, new list.....70%  
Quaker City.....70%  
Pennsylvania.....60&5%  
Pennsylvania, Jr. Ball Bearing.....60%  
Pennsylvania Golf.....50%  
Pennsylvania Horse.....33 1/2&5%  
Pennsylvania Pony.....40&5%

**Granite State:**

Style A, Low Wheel.....70&10&10&5%  
Style B, Low Wheel.....70&10&5%  
Style C, High Wheel.....70&10%  
Style D, High Wheel.....70%

Philadelphia:  
Style M, S. C. K. T.....70&5%  
Style A, All Steel.....60&5%  
Style E, High Wheel.....70&10&5%  
Drexel and Gold Coin, special list.....50%

**Nails—**

Wire Nails and Brads, Miscel-  
laneous.....85&50&85&10%  
Cut and Wire. See Trade Report.

**Hungarian, Finishing, Upholster-  
ers' &c. See Tacks.**

**Horse—**

No. 6 7 8 9 10  
Anchor.....23 21 20 19 18.....40&5%  
Chaplaim.....26 25 24 23.....50%  
Coleman.....33 32 31 30.....60%  
Haven.....23 21 20 19 18.....40%  
Putnam.....23 21 20 19 18.....33 1/2%  
New Putnam.....19 18 17 16 15.....10&10%  
Western.....23 21 20 19 18.....40%  
Joddens' Special Brands.....  
per lb. 9&10¢

**Picture—**  
1 1/2 2 2 1/2 3 3 1/2 in.  
Brass H'd.....55 60 70 ..gro  
Por. Head.....1.10 1.10 1.10 ..gro

**Nippers—**

See Pliers and Nippers.

**Nuts—**

Cold Punched: Off list.  
Mfrs. or U. S. Standard.

Square, Blank or Tapped.....\$4.90  
Hexagon, Blank or Tapped.....\$5.30  
Square, Blank, C. & T.....\$5.20  
Hexagon, Blank, C. & T.....\$5.90

**Hot Pressed:**

Mfrs., U. S. or Nar. Gauge Stan'd.  
Square, Blank.....\$5.30  
Hexagon, Blank.....\$5.20  
Hexagon, Tapped.....\$5.70

**Oakum—**

Best.....lb. 6 1/4 @ 6 1/4¢  
U. S. Navy.....lb. 5 1/4 @ 6¢  
Navy.....lb. 4 1/4 @ 5¢  
Plumbers' Spun Oakum.....2 1/2 @ 1¢  
In carload lots 1/4 lb. off, f.o.b.  
New York.

**Oil Tanks—See Tanks, Oil.**

**Oilers—**

Brass and Copper.....50&10%  
Tin or Steel.....70&70&5%  
Zinc.....70&70&5%  
Chase or Paragon:  
Brass and Copper.....50&10%  
Tin or Steel.....65&10%  
Zinc.....65&10%  
Malleable, Hammers' Imp'd, Nos.  
11, 12 and 13.....20%  
Malleable, Hammers' Old Pattern,  
Nos. 1, 2 and 3.....50%  
American Tube & Stamping Co.:  
Spring Bottom Cans.....70&70&10%  
Railroad Oilers

**Parers—Apple—**

Advance	doz.	\$4.00
Baldwin	doz.	\$4.00
Bonanza Improved	doz.	\$4.50
Daisy	doz.	\$4.00
Dandy	doz.	\$4.50
Eureka Improved	doz.	\$2.00
Family Bay State	doz.	\$15.00
Improved Bay State	doz.	\$36.00
Little Star	doz.	\$5.00
New Lightning	doz.	\$7.00
Reading 72	doz.	\$3.25
Reading 78	doz.	\$3.25
Rocking Table	doz.	\$6.25
Turn Table	doz.	\$6.00
White Mountain	doz.	\$5.00

**Potato—**

Saratoga	doz.	\$7.00
White Mountain	doz.	\$6.00

**Picks and Mattocks—**

List Feb. 23, 1899.....	75%
Cronk's Handled Garden Mattock,	
9 doz., \$6.40.....	33 1/2%

**Pinking Irons—**

See Irons, Pinking.

**Pins, Escutcheon—**

Brass	60¢/60¢/10¢
Iron, list Nov. 11, '85	60¢/60¢/10¢

**Pipe, Cast Iron Soil—**

Carload lots.

Standard, 2-6 in. ....	50¢10¢50¢10¢5%
Extra Heavy, 2-6 in. ....	65¢10%
Fittings .....	70¢10¢70¢10¢5%

**Rice, Merchant—**

**Pipe, Merchant—**

Consumers, Carload.

	Blk. Galv.	Blk. Galv.		Blk. Galv.	Blk. Galv.
1/2 & 3/4 in.	71%	55%	68%	52%	7%
3/4 in.	73%	59%	79%	56%	9%
1 in.	75%	63%	72%	60%	9%
1 1/4 to 6 in.	79%	69%	76 1/2%	66 1/2%	9%
7 to 12 in.	74%	59%	71 1/2%	56%	9%



Jute ..... 45%  
Sisal ..... 33%  
Covert Saddlery Works ..... 60&5

**Rulers, Desk—**

Simpson & Son ..... 30&10%  
Boxwood and Maple ..... 30&10%

**Rules**

Boxwood ..... 60&10%  
Ivory ..... 35&10%  
Chapin-Stephens Co. .... 60&10%  
Boxwood ..... 60&10%  
Flexfold ..... 35&10%  
Ivory ..... 35&10%  
Miscellaneous ..... 50&10%  
Combination ..... 55&10%  
Stationers' ..... 10&10%

Keuffel & Esser Co. .... 35&10%  
Folding, Wood ..... 35&10%  
Folding, Steel ..... 33&10%  
Larkin's Steel ..... 50&10%  
Larkin's Lumber ..... 60%  
Stanley R. & L. Co. .... 62%  
Boxwood ..... 60%  
Ivory ..... 60%  
Miscellaneous ..... 40%  
Zig Zag ..... 40%  
Zig Zag, Pin Joint ..... 42%  
Upson Nut Co. .... 60&10%  
Boxwood ..... 35&10%  
Ivory ..... 35&10%

**Sash Balances—**

See Balance, Sash.

**Sash Locks—**

See Locks, Sash.

**Sash Weights—**

See Weights, Sash.

**Sausage Stuffers or Fillers**

See Stuffers or Fillers, Sausage.

**Saw Frames—**

See Frames, Saw.

**Saw Sets—See Sets, Saw.****Saw Tools—See Tools, Saw.****Saws**

Atkins' ..... 50%  
Circular ..... 50&10%  
Band ..... 35&5  
Cross Cut ..... 50%  
Mulay, Mill and Drag ..... 50%  
One-Man Saw ..... 40%  
Wood Saws ..... 40%  
Hand, Compass, &c. .... 40%  
Chapin-Stephens Co. .... 30&10%  
Turning Saws and Frames ..... 30&10%  
Diamond Saw & Stamping Works ..... 30&10%  
Sterling Kitchen Saws ..... 30&10%  
Disston's ..... 50%  
Circular, Solid and Ins'ted Tooth ..... 50%  
Band, 2 to 14 in. wide ..... 60%  
Band, 4 to 14 in. wide ..... 60%  
Crosscuts ..... 50%  
Narrow Crosscuts ..... 50%  
Mulay, Mill and Drag ..... 50%  
Framed Woodsaws ..... 30%  
Woodsaw Blades ..... 30%  
Hand Saws, Nos. 12, 90, 9, 16, 100 ..... 25%  
D&B, 120, 76, 77, 8 ..... 25%  
Hand Saws, Nos. 7, 107, 107 1/2, 3, 1 ..... 30%  
0, 00, Combination ..... 30%  
Compass, Key Hole, &c. .... 25%  
Butcher Saws and Blades ..... 35%  
C. E. Jennings & Co.'s ..... 25%  
Butcher Saws ..... 30%  
Compass and Key Hole Saws ..... 35%  
Framed Wood Saws ..... 30%  
Hand Saws ..... 25%  
Wood Saw Blades ..... 30%  
Millers Falls ..... 15&10%  
Butcher Saws ..... 15&10%  
Star Saw Blades ..... 15&10%  
Peace & Richardson's Hand Saws ..... 30%  
Simonds' ..... 50%  
Circular Saws ..... 50%  
Crescent Ground Cross Cut Saws ..... 35%  
One-Man Cross Cuts ..... 40&10%  
Gang Mill, Mulay and Drag Saws ..... 50%  
Band Saws ..... 30%  
Butcher Saws ..... 35&10%  
Hand Saws ..... 25&10%  
Hand Saws, Bay State Brand ..... 40%  
Compass, Key Hole, &c. .... 25&10%  
Wood Saws ..... 35&10%  
Springfield Mach. Screw Co. .... 40&10%  
Diamond Kitchen Saws ..... 40&10%  
Butcher Saws ..... 35&10%  
Wheeler, Madden & Clemens Mfg. Co.'s Cross Cut Saws ..... 50%  
**Hack Saws—**  
Atkins' Hack Saw Blades A & A ..... 25%  
Disston's ..... 25%  
Concave Blades ..... 25%  
Keystone ..... 40%  
Hack Saw Frames ..... 30%  
Fitchburg File Works, The Best ..... 35%  
C. E. Jennings & Co.'s ..... 100%  
Hack Saw Frames, Nos. 175, 180, 180 1/2, 180 3/4 ..... 40&10%  
Hack Saws, Nos. 175, 180, complete ..... 40&10%  
Goodell's Hack Saw Blades ..... 40%  
Griffin's Hack Saw Frames ..... 35&10%  
Griffin's Hack Saw Blades ..... 35&10%  
Springfield Mach. Screw Co. .... 35%  
Diamond Hack Saw Blades ..... 50%  
Star Hack Saws and Blades ..... 15&10%  
Sterling Hack Saw Blades ..... 30&10%  
Sterling Hack Saw Frames ..... 30&10%  
Sterling Power Hack Saw Machines, each, No. 1, \$25.00; No. 2, \$30.00 ..... 10%  
Victor Hack Saw Blades ..... 25%  
Victor Hack Saw Frames ..... 40%  
**Scroll—**  
Barnes' No. 7, \$15 ..... 25%  
Barnes' Scroll Saw Blades ..... 40%  
Barnes' Velocipede Power Scroll Saw, without boring attachment, \$18, with boring attachment, \$20 ..... 30%  
Lester, complete, \$10.00 ..... 15&10%  
Rogers, complete, \$4.00 ..... 15&10%

**Scissors, Fish—**

Covert's Saddlery Works ..... 60&10%

**Scales**

Family, Turnbills ..... 50&10%

**Counter**

Hatch, Platform, 1/4 oz. to 1 lb. .... 35.00  
Two Platforms, 1/4 oz. to 1 lb. .... 35.00  
Union Platform, Plain, \$1.70 to \$1.90  
Union Platform, Stpd. \$1.85 to \$2.15  
Chattillon's ..... 25%

Favorite ..... 40%  
Crocers' Trip Scales ..... 50%  
Chicago Scale Co. .... 50%  
The "Little Detective" ..... 25%  
Union or Family No. 2 ..... 60%  
Portable Platform (reduced list) ..... 50%  
Wagon or Stock (reduced list) ..... 25&5%  
The Standard ..... 50%  
"The Standard" R. K. and Wagon ..... 50%

**Scrapers**

Box, 1 Handle ..... doz. \$2.00 to \$2.25  
Box, 2 Handle ..... doz. \$2.50 to \$2.85  
Ship ..... Light, \$2.00; Heavy, \$4.50  
Adjustable Box Scraper (S. R. & L. Co.), \$6.00 ..... 15%  
Chapin-Stephens Co., Box ..... 30&10%

**Screens, Window and Frames**

Maine Screen Frames ..... 40&10%  
See also Doors.

**Screws—Bench and Hand**

Bench, Iron, doz., 1 in., \$2.50 to 2.75; 1 1/4, \$3.00 to 3.25; 1 1/2, \$3.50 to 3.75  
Bench, W'd, Beech, doz. 30&10%  
Hand, Wood ..... 30&10%  
R. Bliss Mfg. Co., Hand, 30&10%  
Chapin-Stephens Co., Hand, 30&10%  
Ohio Tool Co., Bench and Hand, 30%  
Coach, Lag and Hand Rail—Lag, Cone Point, list Oct. 1, '99 ..... 75&15%  
Coach, Gimlet Point, list Oct. 1, '99 ..... 75&10%  
Hand Rail, list Jan. 1, '91 ..... 70&10%

**Jack Screws—**

Standard List ..... 80&10%  
Millers Falls ..... 50&10%  
Millers Falls, Roller ..... 50&10%  
F. B. & W. .... 70&10%  
Swett Iron Works ..... 75&10%

**Machine—**

List Jan. 1, '98:

Flat or Round Head, Iron ..... 50&10%  
Flat or Round Head, Brass ..... 50&10%

**Set and Cap—**

Set (Iron) ..... 80%  
Set (Steel), net advance over Iron ..... 25%  
Sq. Hd. Cap. .... 75%  
Hex. Hd. Cap. .... 75%  
Rd. Hd. Cap. .... 60&10%  
Pillister Hd. Cap. .... 60&10%

**Wood—**

List July 23, 1903.

Flat Head, Iron ..... 87 1/2 to 100%  
Round Head, Iron ..... 85 to 100%  
Flat Head, Brass ..... 85 to 100%  
Round Head, Brass ..... 80 to 100%  
Flat Head, Bronze ..... 77 1/2 to 100%  
Round Head, Bronze ..... 75 to 100%  
Drive Screws ..... 87 1/2 to 100%

**Scroll Saws—**

See Saws, Scroll.

**Scythes—**

Grass, No. 1, Plain Finish ..... \$9.25  
Clipper, Bronzed Webb ..... \$9.50  
No. 3 Clipper, Pol'd Webb ..... \$9.75  
No. 6 Clipper & Solid Steel ..... \$7.00  
Bush, Weed & Bramble, No. 2, \$6.50  
Grain, No. 1 ..... \$9.25  
Bronzed Webb, No. 1 ..... \$9.50  
Nos. 3 & 4 Clipper, Grain ..... \$9.75  
Solid Steel No. 6 ..... \$9.25

**Seeders, Raisin—**

Enterprise ..... 25&30%

**Sets—Aul and Tool—**

Alken's Sets, Aul and Tools: No. 20, \$10.00; No. 21, \$12; No. 22, \$14; No. 23, \$16; No. 24, \$18; No. 25, \$20; No. 26, \$22; No. 27, \$24; No. 28, \$26; No. 29, \$28; No. 30, \$30; No. 31, \$32; No. 32, \$34; No. 33, \$36; No. 34, \$38; No. 35, \$40; No. 36, \$42; No. 37, \$44; No. 38, \$46; No. 39, \$48; No. 40, \$50; No. 41, \$52; No. 42, \$54; No. 43, \$56; No. 44, \$58; No. 45, \$60; No. 46, \$62; No. 47, \$64; No. 48, \$66; No. 49, \$68; No. 50, \$70; No. 51, \$72; No. 52, \$74; No. 53, \$76; No. 54, \$78; No. 55, \$80; No. 56, \$82; No. 57, \$84; No. 58, \$86; No. 59, \$88; No. 60, \$90; No. 61, \$92; No. 62, \$94; No. 63, \$96; No. 64, \$98; No. 65, \$100; No. 66, \$102; No. 67, \$104; No. 68, \$106; No. 69, \$108; No. 70, \$110; No. 71, \$112; No. 72, \$114; No. 73, \$116; No. 74, \$118; No. 75, \$120; No. 76, \$122; No. 77, \$124; No. 78, \$126; No. 79, \$128; No. 80, \$130; No. 81, \$132; No. 82, \$134; No. 83, \$136; No. 84, \$138; No. 85, \$140; No. 86, \$142; No. 87, \$144; No. 88, \$146; No. 89, \$150; No. 90, \$154; No. 91, \$158; No. 92, \$162; No. 93, \$166; No. 94, \$170; No. 95, \$174; No. 96, \$178; No. 97, \$182; No. 98, \$186; No. 99, \$190; No. 100, \$194; No. 101, \$198; No. 102, \$202; No. 103, \$206; No. 104, \$210; No. 105, \$214; No. 106, \$218; No. 107, \$222; No. 108, \$226; No. 109, \$230; No. 110, \$234; No. 111, \$238; No. 112, \$242; No. 113, \$246; No. 114, \$250; No. 115, \$254; No. 116, \$258; No. 117, \$262; No. 118, \$266; No. 119, \$270; No. 120, \$274; No. 121, \$278; No. 122, \$282; No. 123, \$286; No. 124, \$290; No. 125, \$294; No. 126, \$298; No. 127, \$302; No. 128, \$306; No. 129, \$310; No. 130, \$314; No. 131, \$318; No. 132, \$322; No. 133, \$326; No. 134, \$330; No. 135, \$334; No. 136, \$338; No. 137, \$342; No. 138, \$346; No. 139, \$350; No. 140, \$354; No. 141, \$358; No. 142, \$362; No. 143, \$366; No. 144, \$370; No. 145, \$374; No. 146, \$378; No. 147, \$382; No. 148, \$386; No. 149, \$390; No. 150, \$394; No. 151, \$398; No. 152, \$402; No. 153, \$406; No. 154, \$410; No. 155, \$414; No. 156, \$418; No. 157, \$422; No. 158, \$426; No. 159, \$430; No. 160, \$434; No. 161, \$438; No. 162, \$442; No. 163, \$446; No. 164, \$450; No. 165, \$454; No. 166, \$458; No. 167, \$462; No. 168, \$466; No. 169, \$470; No. 170, \$474; No. 171, \$478; No. 172, \$482; No. 173, \$486; No. 174, \$490; No. 175, \$494; No. 176, \$498; No. 177, \$502; No. 178, \$506; No. 179, \$510; No. 180, \$514; No. 181, \$518; No. 182, \$522; No. 183, \$526; No. 184, \$530; No. 185, \$534; No. 186, \$538; No. 187, \$542; No. 188, \$546; No. 189, \$550; No. 190, \$554; No. 191, \$558; No. 192, \$562; No. 193, \$566; No. 194, \$570; No. 195, \$574; No. 196, \$578; No. 197, \$582; No. 198, \$586; No. 199, \$590; No. 200, \$594; No. 201, \$598; No. 202, \$602; No. 203, \$606; No. 204, \$610; No. 205, \$614; No. 206, \$618; No. 207, \$622; No. 208, \$626; No. 209, \$630; No. 210, \$634; No. 211, \$638; No. 212, \$642; No. 213, \$646; No. 214, \$650; No. 215, \$654; No. 216, \$658; No. 217, \$662; No. 218, \$666; No. 219, \$670; No. 220, \$674; No. 221, \$678; No. 222, \$682; No. 223, \$686; No. 224, \$690; No. 225, \$694; No. 226, \$698; No. 227, \$702; No. 228, \$706; No. 229, \$710; No. 230, \$714; No. 231, \$718; No. 232, \$722; No. 233, \$726; No. 234, \$730; No. 235, \$734; No. 236, \$738; No. 237, \$742; No. 238, \$746; No. 239, \$750; No. 240, \$754; No. 241, \$758; No. 242, \$762; No. 243, \$766; No. 244, \$770; No. 245, \$774; No. 246, \$778; No. 247, \$782; No. 248, \$786; No. 249, \$790; No. 250, \$794; No. 251, \$798; No. 252, \$802; No. 253, \$806; No. 254, \$810; No. 255, \$814; No. 256, \$818; No. 257, \$822; No. 258, \$826; No. 259, \$830; No. 260, \$834; No. 261, \$838; No. 262, \$842; No. 263, \$846; No. 264, \$850; No. 265, \$854; No. 266, \$858; No. 267, \$862; No. 268, \$866; No. 269, \$870; No. 270, \$874; No. 271, \$878; No. 272, \$882; No. 273, \$886; No. 274, \$890; No. 275, \$894; No. 276, \$898; No. 277, \$902; No. 278, \$906; No. 279, \$910; No. 280, \$914; No. 281, \$918; No. 282, \$922; No. 283, \$926; No. 284, \$930; No. 285, \$934; No. 286, \$938; No. 287, \$942; No. 288, \$946; No. 289, \$950; No. 290, \$954; No. 291, \$958; No. 292, \$962; No. 293, \$966; No. 294, \$970; No. 295, \$974; No. 296, \$978; No. 297, \$982; No. 298, \$986; No. 299, \$990; No. 300, \$994; No. 301, \$998; No. 302, \$1002; No. 303, \$1006; No. 304, \$1010; No. 305, \$1014; No. 306, \$1018; No. 307, \$1022; No. 308, \$1026; No. 309, \$1030; No. 310, \$1034; No. 311, \$1038; No. 312, \$1042; No. 313, \$1046; No. 314, \$1050; No. 315, \$1054; No. 316, \$1058; No. 317, \$1062; No. 318, \$1066; No. 319, \$1070; No. 320, \$1074; No. 321, \$1078; No. 322, \$1082; No. 323, \$1086; No. 324, \$1090; No. 325, \$1094; No. 326, \$1098; No. 327, \$1102; No. 328, \$1106; No. 329, \$1110; No. 330, \$1114; No. 331, \$1118; No. 332, \$1122; No. 333, \$1126; No. 334, \$1130; No. 335, \$1134; No. 336, \$1138; No. 337, \$1142; No. 338, \$1146; No. 339, \$1150; No. 340, \$1154; No. 341, \$1158; No. 342, \$1162; No. 343, \$1166; No. 344, \$1170; No. 345, \$1174; No. 346, \$1178; No. 347, \$1182; No. 348, \$1186; No. 349, \$1190; No. 350, \$1194; No. 351, \$1198; No. 352, \$1202; No. 353, \$1206; No. 354, \$1210; No. 355, \$1214; No. 356, \$1218; No. 357, \$1222; No. 358, \$1226; No. 359, \$1230; No. 360, \$1234; No. 361, \$1238; No. 362, \$1242; No. 363, \$1246; No. 364, \$1250; No. 365, \$1254; No. 366, \$1258; No. 367, \$1262; No. 368, \$1266; No. 369, \$1270; No. 370, \$1274; No. 371, \$1278; No. 372, \$1282; No. 373, \$1286; No. 374, \$1290; No. 375, \$1294; No. 376, \$1298; No. 377, \$1302; No. 378, \$1306; No. 379, \$1310; No. 380, \$1314; No. 381, \$1318; No. 382, \$1322; No. 383, \$1326; No. 384, \$1330; No. 385, \$1334; No. 386, \$1338; No. 387, \$1342; No. 388, \$1346; No. 389, \$1350; No. 390, \$1354; No. 391, \$1358; No. 392, \$1362; No. 393, \$1366; No. 394, \$1370; No. 395, \$1374; No. 396, \$1378; No. 397, \$1382; 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Quickcut Emery Rubbing Bricks, 3 1/2 x 4 x 1/2 in. \$1.00  
Hindustan No. 1, R. G. L. \$1.00  
Hindustan No. 1, Small, \$1.00  
Axe Stones (all kinds) \$1.00  
Turkey Oil Stones, Extra, 5 to 8 in. \$1.00  
Queer Creek Stones, 4 to 8 in. \$1.00  
Queer Creek Slips, \$1.00  
Sand Stone, \$1.00

### Scythe Stones—

Chicago Wheel & Mfg. Co.:  
Gem Corundum, 10 in., \$3.00  
gro., 12 in., \$10.00  
Norton Emery Scythe Stones:  
Less than gross lots, \$3.00  
One gross or more, \$7.20  
Lots of 10 gross or more, \$6.00

### Scythe Stones—

Black Diamond S. S., \$12.00  
Lamotte S. S., \$11.00  
White Mountain S. S., \$9.00  
Green Mountain S. S., \$6.00  
Extra Indian Pond S. S., \$7.00  
No. 1 Indian Pond S. S., \$7.00  
No. 2 Indian Pond S. S., \$7.00  
Leader End S. S., \$4.50  
Quick Cut Emery, \$10.00  
Pure Corundum, \$18.00  
Crescent, \$7.00  
Emery Scythe Rifles, 2 Coat, \$2.00  
Emery Scythe Rifles, 3 Coat, \$1.00  
Emery Scythe Rifles, 4 Coat, \$1.20  
Balance of 1904 list 3 1/2%

### Stoppers, Bottle—

Victor Bottle Stoppers, \$3.00

### Stops—Bench—

Morrill's, \$15.00  
Morrill's, No. 1, \$10.00  
Morrill's, No. 2, \$12.50

### Door—

Chapin-Stephens Co., \$40.00

### Plane—

Chapin-Stephens Co., \$20.00

### Straps—Box—

Cary's Universal, case lots, \$2.50

### Hame—

Covert's Saddlery Works, \$60.00

### Stretchers, Carpet—

Cast Iron, Steel Points, doz., \$60.00

### Socket—

Bullard, \$4.00

### Excelsior Stretcher and Tack Hammer Combined, \$3.00

### Strops, Razor—

Star Diagonal Strop, \$2.50

### Stuffers, Sausage—

Enterprise Mfg. Co., \$2.50

### Sweepers, Carpet—

National Sweep Co., \$12.00

Plated, \$12.00

Hepplewhite, Roller Bearing, \$12.00

Sheraton, Roller Bearing, \$12.00

Ye Mission, Roller Bearing, \$12.00

Transparent, Roller Bearing, \$12.00

Glass top, Nickel, \$12.00

National Queen, Roller Bearing, \$12.00

Fancy Veneers, \$12.00

Loyal, Roller Bearing, \$12.00

Nickel, \$12.00

Triple Medal, Roller Bearing, \$12.00

Monarch, Roller Bearing, \$12.00

Monarch, Roller Bearing, \$12.00

Perpetual, Regular Br'gs, \$12.00

Monarch Extra (17 in. case), Roller Bearing, \$12.00

Monarch Extra (17 in. case), Roller Bearing, \$12.00

Auditorium (26 in. case), Roller Bearing, \$12.00

Bearing, Nickel, \$12.00

Mammoth (30 in. case), Roller Bearing, \$12.00

NOTE—Rebates: 50¢ per dozen on three dozen lots; \$1 per dozen on five dozen lots; \$2 per dozen on ten dozen lots; \$2.50 per dozen on twenty-five dozen lots, streater Metal Stamping Co.

Model E, Sanitaire, \$25.00

Model A, Sterling, \$25.00

Model B, Sterling, \$25.00

Model B, Sterling, \$25.00

Model C, Sterling, \$25.00

Model D, Sterling, \$25.00

### Tacks, Finishing Nails, &c.

New List, May 1, 1905.

American Carpet Tacks, \$1.00

American Cut Tacks, \$1.00

Suedes Cut Tacks, \$1.00

Suedes Upholsterers', \$1.00

Gimp Tacks, \$1.00

Lace Tacks, \$1.00

Trimming Tacks, \$1.00

Looking Glass Tacks, \$1.00

Bill Posters' and Railroad Tacks, \$1.00

Hungarian Nails, \$1.00

Finishing Nails, \$1.00

Trunk and Clout Nails, \$1.00

NOTE—The above prices are for Standard Weights. An extra 5% is given on Medium Weights, and an extra 10% is given on Light weights.

### Miscellaneous—

Double Pointed Tacks, \$1.00

See also Nails, Wire.

### Tanks, Oil—

Emerald, R. M. Co., \$3.00

Emerald, R. M. Co., \$3.00

Queen City, R. M. Co., \$3.00

Queen City, R. M. Co., \$3.00

### Tapes, Measuring—

American Asses' Skin, \$1.00

Patent Leather, \$1.00

Steel, \$1.00

Chesterman's, \$1.00

Eddy Asses' Skin, \$1.00  
Eddy Patent Leather, \$1.00  
Eddy Steel, \$1.00  
Kaufel & Esser Co., \$1.00  
Favorite, Ass Skin, \$1.00  
Favorite, Duck and Leather, \$1.00  
Metallic and Steel, lower list, \$1.00  
Pocket, \$1.00  
Lufkin's, \$1.00  
Asses' Skin, \$1.00  
Metallic, \$1.00  
Patent Bend, Leather, \$1.00  
Pocket, \$1.00  
Steel, \$1.00

### Teeth, Harrow—

Steel Harrow Teeth, plain or headed, \$1.00

per 100 lbs. \$2.75 to \$3.00

### Thermometers—

Tin Case, \$1.00

### Ties, Bale—Steel Wire—

Single Loop, \$1.00

Monitor, Cross Head, \$1.00

### Brick Ties—

Niagara Brick Ties, \$1.00

### Tinners' Shears, &c.—

See Shears, Tinners', &c.

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tips, Safety Pole—

Covert's Saddlery Works, \$1.00

### Tire Benders, Upsetters, &c.

See Benders and Upsetters, Tire.

### Tools—Coopers'—

L. & I. J. White, \$1.00

### Hay—

Myers' Hay Tools, \$1.00

Stowell's Hay Carriers, \$1.00

Stowell's Hay Forks, \$1.00

Stowell's Fork Pulleys, \$1.00

### Miniature—

Smith & Hemenway Co., \$1.00

### Saw—

Atkins' Cross Cut Saw Tools, \$1.00

Simonds' Improved, \$1.00

Simonds' Crescent, \$1.00

### Ship—

L. & I. J. White, \$1.00

### Transom Lifters—

See Lifters, Transom.

### Traps—Fly—

Balloon, Globe or Acme, doz., \$1.50

Harper, Champion or Paragon, doz., \$1.25

doz., \$1.50

### Game—

Imitation Onions, \$1.00

Newhouse, \$1.00

Hawley & Norton, \$1.00

Victor, \$1.00

Oneda Community Jump, \$1.00

### Mouse and Rat—

Mouse, Wood, Choker, doz. holes, \$1.00

Mouse, Round or Square Wire, doz. \$1.00

Marty French Rat and Mouse Traps (Genuine):

No. 1, Rat, each \$1.21; doz. \$13.25

No. 3, Rat, \$1.21; doz. \$13.25

No. 5, Rat, \$1.21; doz. \$13.25

No. 3 1/2, Rat, \$1.21; doz. \$13.25

No. 4, Mouse, \$1.21; doz. \$13.25

No. 5, Mouse, \$1.21; doz. \$13.25

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No. 5, Mouse, \$1.21; doz. \$13.25

Vises—  
Solid Box, \$1.00  
Parallel—  
Athol Machine Co., \$1.00  
Simpson's Adjustable, \$1.00  
Standard, \$1.00  
Amateur, \$1.00  
Columbian Hdw. Co., \$1.00  
Emmert Universal, \$1.00  
Pattern Makers' No. 1, \$1.00  
No. 2, \$1.00  
Machine and Tool Makers' No. 4A, \$1.00  
No. 5A, \$1.00  
No. 6A, \$1.00  
No. 10A, \$1.00  
No. 22, \$1.00  
Presto Quick Acting, \$1.00  
Fisher & Norris Double Screw, \$1.00  
Hollands', \$1.00  
Machinists', \$1.00  
Keystone, \$1.00  
Lewis Tool Co., \$1.00  
Adjustable Jaw, \$1.00  
Monarch, \$1.00  
Massey Vis, \$1.00  
Climber, \$1.00  
Perfect, \$1.00  
Lightning Grip, \$1.00  
Merrill's, \$1.00  
Miller's Falls, \$1.00  
Parker's, \$1.00  
Victor, \$1.00  
Regulars, \$1.00  
Vulcan's, \$1.00  
Combination Pipe, \$1.00  
Sargent's, \$1.00  
Snediker's X. L., \$1.00  
Stephens', \$1.00  
Williamson Mfg Co. Double Swivel, \$1.00

### Saw Filers—

Diaston's D 3 Clamp and Guide, \$1.00

doz. \$30.00

Perfection Saw Clamps, \$1.00

Reading, \$1.00

Wentworth's Rubber Jaw, Nos. 1, 2 and 3, \$1.00

### Wood Workers—

Massey Vise Co., \$1.00

Lightning Grip, \$1.00

Perfect, \$1.00

Wyman & Gordon's Quick Action, 6 in., \$6.00; 9 in., \$7.00; 14 in., \$8.00.

### Miscellaneous—

Signal & Keeler Combination Pipe, \$1.00

Vine, \$1.00

Hollands' Combination Pipe, \$1.00

Massey's Quick Action Pipe, \$1.00

Parker's Combination Pipe, \$1.00

87 Series, \$1.00

No. 870, \$1.00

Williamson Mfg Co. Double Swivel, \$1.00

Combination Pipe, \$1.00

### Wads—Price per M.

B. E., 11 up, \$1.00

B. E., 9 and 10, \$1.00

B. E., 8, \$1.00

B. E., 7, \$1.00

P. E., 11 up, \$1.00

P. E., 9 and 10, \$1.00

P. E., 8, \$1.00

P. E., 7, \$1.00

Ely's B. E., 11 and larger, \$1.70

Ely's P. E., 12 to 20, \$3.00

### Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow Ware:

Enameled, \$1.00

Ground, \$1.00

Plain or Unground, \$1.00

Country Hollow Ware, per 100 lbs., \$2.75

White Enameled Ware:

Maslin Kettles, \$1.00

Covered Wares, \$1.00

Tinned and Turned, \$1.00

Enameled, \$1.00

See also Pots, Glue.

### Enameled—

Agate Nickel Steel Ware, \$1.00

Iron Clad Ware, \$1.00

Lava, Enameled, \$1.00

Never Break Enameled, \$1.00